The BL67 Solution

BL67 combines all the flexibility of an in-the-cabinet PLC I/O system with modularity, ruggedness and connectorization. BL67 complements the AIM™, BL20 and piconet ® product families to meet the needs of unique applications, such as small machine or conveyor systems requiring IP 67 protection.

The BL67 Concept

The BL67 modular concept is a very flexible approach to connectorized I/O. The gateway, base and electronic modules provide many benefits to the user.

• The gateway provides communication between the fieldbus and I/O modules; modules are not dependent on the fieldbus protocol.
• DIN-rail or frame mountable base modules are available with eurofast ® (M12), minifast ® (7/8-16UN), M23 and picofast ® (M8) connectors.
• Electronic modules are hot swappable.
• Power distribution module (24 VDC) supplies the connected I/O signals.

BL67's openness, flexibility, connectorization, compact housing and ruggedness provide a viable alternative to in-the-cabinet I/O.

Maximum Size of a BL67 Station

BL67 stations consist of a gateway and a maximum of 32 modules (equivalent to 1 m station length). Some high-tech and analog I/O modules may consume or produce large amounts of data, and therefore may limit the number of modules that may be used per system. It is highly recommended that the I/Oassistant software is used when planning and commissioning BL67 systems. This program allows you to build the BL67 node on your computer and verify that all restrictions with regard to power and size are met. The free I/Oassistant software is available for download from TURCK website.

Addressing

As a node on a network, BL67 stations are addressed dependent on the network system being used. Each network gateway has a set of rotary switches used to set the address for the node.
DeviceNet™ and CANopen gateways may be addressed between 0 and 63 via two switches (one for the 10's digit and one for the 1's digit). For example, to set the address to 37 you would set the 10's switch to 3 and the 1's switch to 7. The third switch on the gateway may be used to set the communication rate of the network interface. PROFIBUS ®-DP gateways may be set from 1 to 125 by using three switches (one for the 100's, one for the 10's and one for the 1's). Ethernet gateways allow different addressing schemes depending on the Ethernet addressing method being used in the overall system. Dynamic addressing schemes include BootP and DHCP, while hard-coding a static address is also allowed.

BL67 Power Distribution

Power Overview

The power supply for a BL67 station is fed via the power connector on the PROFIBUS® gateway or directly from the network on the DeviceNet™ gateway. Power feeder modules can be added to the system at any point to provide a fresh isolated supply of power to all I/O connected to its right.

Internal Power Consumption via Module Bus

The amount of BL67 modules that may be supplied via the internal module bus depends on the respective nominal current I_{MB} of the individual modules on the module bus. The sum of the nominal current inputs of the connected BL67 modules must not exceed 1.5 A. If the I/O *assistant* software is used, an error message is generated automatically via the <Station - Verify> as soon as the system supply via the module bus is no longer sufficiently guaranteed.

Module	Nominal 1) Current at 5 V I_{MB}	Effective Draw 2) from Gateway at 24 VDC $I_{MB(24)}$	Nominal 3) Current from V_I	Nominal 4) Current from V_O
BL67-GW-DPV1	-	≤150 mA		
BL67-GW-DN	-	≤100 mA		
BL67-PF-24VDC	≤30 mA	≤9 mA		
BL67-4DI-P	≤30 mA	≤9 mA	≤40 mA	
BL67-8DI-P	≤30 mA	≤9 mA	≤40 mA	
BL67-4DO-0.5A-P	≤30 mA	≤9 mA		≤100 mA
BL67-4DO-2A-P	≤30 mA	≤9 mA		≤100 mA
BL67-8DO-0.5A-P	≤30 mA	≤9 mA		≤100 mA
BL67-2AI-V	≤35 mA	≤10 mA	≤12 mA	
BL67-2AI-I	≤35 mA	≤10 mA	≤12 mA	
BL67-2AI-TC	≤35 mA	≤10 mA	≤30 mA	
BL67-2AI-PT	≤45 mA	≤13 mA	≤45 mA	
BL67-2AO-I	≤40 mA	≤12 mA		≤50 mA
BL67-2AO-V	≤60 mA	≤17 mA		≤50 mA
BL67-1RS232	≤100 mA	≤28 mA	≤50 mA	
BL67-8XSG-PD	≤30 mA	≤9 mA		≤100 mA
BL67-1SSI	≤50 mA	≤15 mA	≤50 mA	
BL67-4DI-PD	≤30 mA	≤9 mA		≤100 mA
BL67-8DI-PD	≤30 mA	≤9 mA		≤100 mA

To calculate current draw on DeviceNet: Add $I_{MB(24)}$ for all modules. Then add V_I and V_O for electronic modules to the left of the first power feed module. Next, add the current draw of the I/O devices.

To calculate current draw on PROFIBUS gateway power connector for V_I: Add I_{MB} for all modules. Then add V_I current for all modules to the left of the first power feed module. Next, add the current draw of the input devices.

For V_O, add the V_O current for all modules to the left of the first power feed module. Next, add the current draw of the output devices.
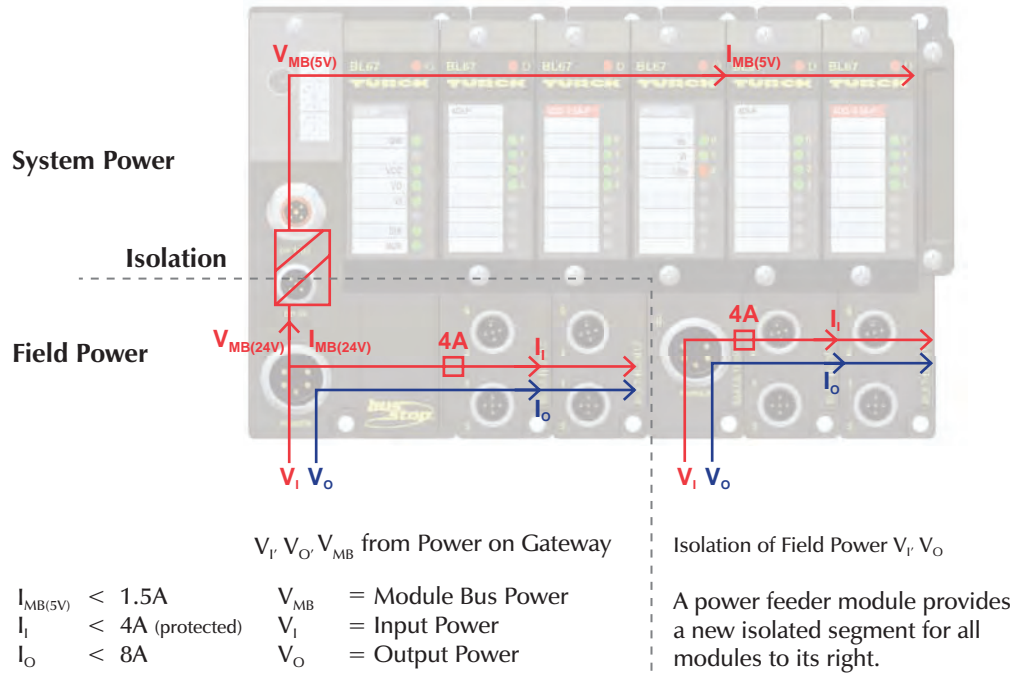
V_{MB} = Module bus power
V_I = Input power
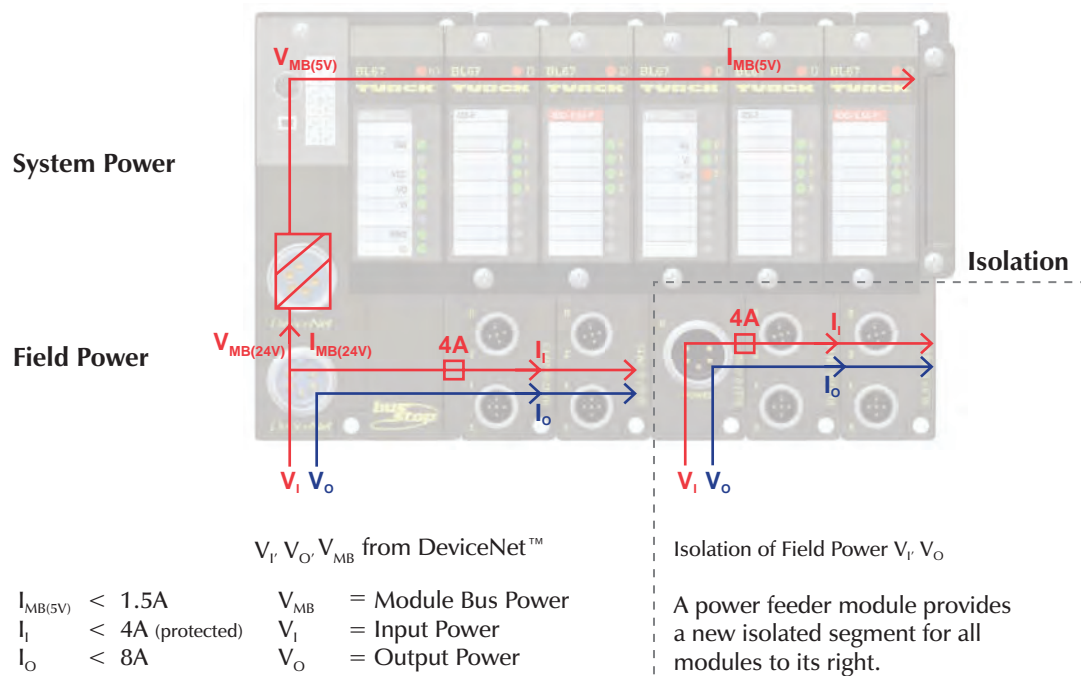V_O = Output power
I_{MB} = Module bus current
$I_{MB(24)}$ = Effective current draw from gateway at 24 VDC supply

Applying Power to BL67

PROFIBUS® , Ethernet and CANopen System

System Power

Isolation

Field Power

$V_{MB(5V)}$ $I_{MB(5V)}$

$V_{MB(24V)}$ $I_{MB(24V)}$ 4A I_I 4A I_I I_O I_O

V_I V_O V_I V_O

$V_{I'}$ $V_{O'}$ V_{MB} from Power on Gateway

Isolation of Field Power $V_{I'}$ V_O

$I_{MB(5V)}$	< 1.5A	V_{MB}	= Module Bus Power
I_I	< 4A (protected)	V_I	= Input Power
I_O	< 8A	V_O	= Output Power

A power feeder module provides a new isolated segment for all modules to its right.

DeviceNet™ System

System Power

Isolation

Field Power

$V_{MB(5V)}$ $I_{MB(5V)}$

$V_{MB(24V)}$ $I_{MB(24V)}$ 4A I_I 4A I_I I_O I_O

V_I V_O V_I V_O

$V_{I'}$ $V_{O'}$ V_{MB} from DeviceNet™

Isolation of Field Power $V_{I'}$ V_O

$I_{MB(5V)}$	< 1.5A	V_{MB}	= Module Bus Power
I_I	< 4A (protected)	V_I	= Input Power
I_O	< 8A	V_O	= Output Power

A power feeder module provides a new isolated segment for all modules to its right.

Environmental Conditions

Intended Application Environments

- BL67 does not need an enclosure
- Mount directly on machine or conveyor
- Rugged design provides protection against dirt, dust and liquids

Not intended for These Environments

- Continuous submersion
- 100 percent humidity
- High pressure washdown

Note: For higher levels of protection consider fully potted AIM stations

General Environmental	
Potential isolation	Via optocoupler
Operating temperature	32° to +131°F (0° to +55°C)
Storage temperature	-13° to +185°F (-25° to +85°C)
Relative humidity	5 to 95% (indoor), noncondensing
Vibration	1.0 g 5-10 Hz
Shock	15 g
Protection class	IP 67, NEMA 1, 3, 4, 12, 13
Electromagnetic compatibility (EMC)	According to EN 61131-2
Housing material	PC-V0 (Lexan), Nickel plated brass
Approvals	CE
	UL (pending)
	CSA (pending)

DeviceNet Gateway

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Various I/O Styles**

BL67-GW-DN

Electrical

- Operating Current: <600 mA from V_{MB}
- Supply Current: <8 A to I/O (from DeviceNet)
- Backplane Current: <1.5 A (from DeviceNet)

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 67
- Vibration: 5 g @ 10-500 Hz

Material

- Housing: PC-V0 (Lexan)

Diagnostics (Logical)
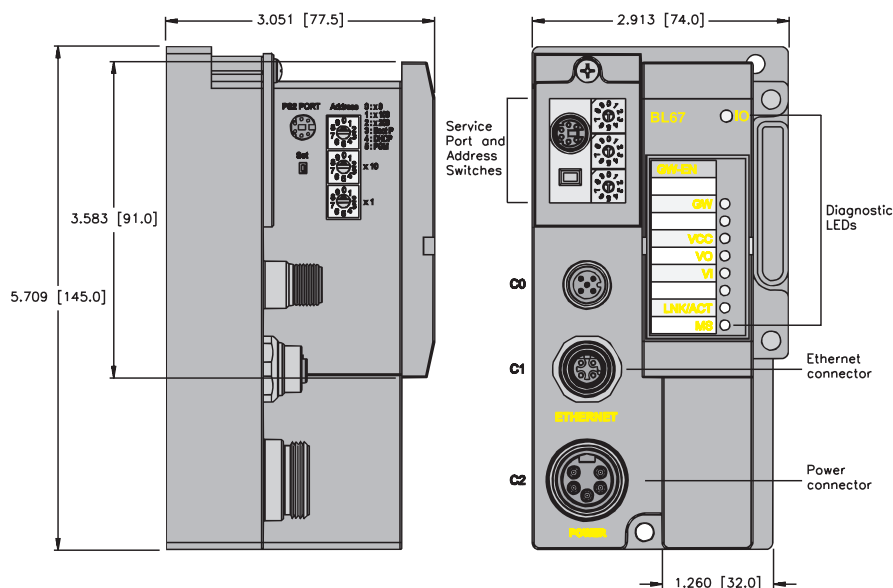
- Diagnostic information available through the DeviceNet I/O map

Diagnostics (Physical)

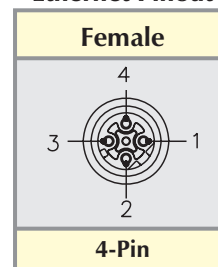- LEDs to indicate status of DeviceNet and Module Bus communication
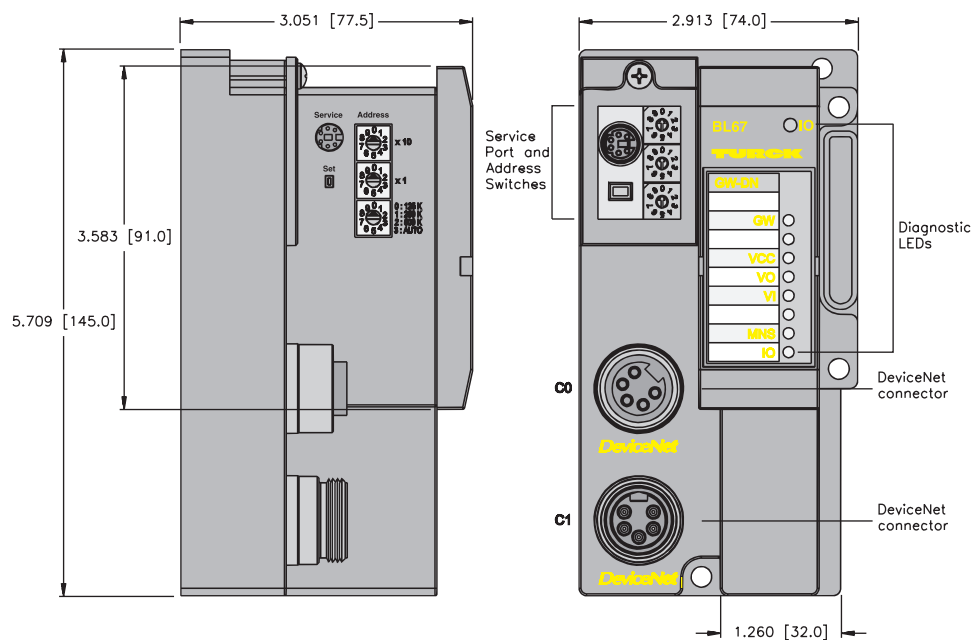
DeviceNet *minifast* ® Pinouts

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

Male	Female
5-Pin	5-Pin

Note: Power feeding modules may be used for I/O current supply to prevent overloading the DeviceNet power supply.

ModBus TCP/IP
Ethernet Gateways

BL67-GW-EN
BL67-PG-EN

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Various I/O Styles**

Electrical
- Operating Current: <600 mA from V_{MB}
- Input Supply Current: <4 A (from V_I)
- Output Supply Current: <8 A (from V_O)
- Backplane Current: <1.5 A (from V_{MB})

Mechanical
- Operating Temperature: -12 to +55°C (-13 to +131°F)
- Protection: IP 67
- Vibration: 5 g @ 10-500 Hz

Material
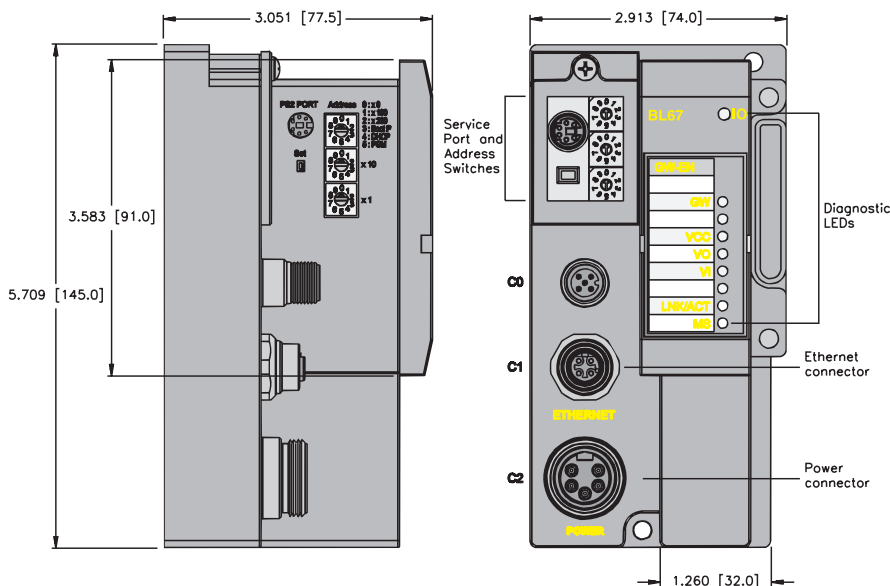- Housing: PC-V0 (Lexan)

Diagnostics (Logical)
- Diagnostic information available through the system I/O map
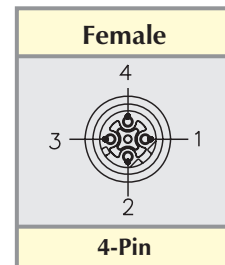
Diagnostics (Physical)
- LEDs to indicate status of Network and Module Bus communication

Programmability
- PG in part number designates a programmable gateway
- Progammable according to IEC 61131.3 using CodeSys (includes ladder logic)
- Use CodeSys to create logic programs to control local I/O

Ethernet Pinout

Female
4-Pin

1 = TD+
2 = RD+
3 = TD-
4 = RD-

5-pin *minifast*® Power Pinout

Male
5-Pin

1 = Gnd
2 = Gnd
3 = PE
4 = V_I
5 = V_O

Service Port and Address Switches

Diagnostic LEDs

Ethernet connector

Power connector

3.051 [77.5]
3.583 [91.0]
5.709 [145.0]
2.913 [74.0]
1.260 [32.0]

![BL67]

Ethernet IP
Ethernet Gateways

BL67-GW-EN-IP
BL67-PG-EN-IP

(UL) CE (SP)

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <600 mA from V_{MB}
- Input Supply Current: <4 A (from V_I)
- Output Supply Current: <8 A (from V_O)
- Backplane Current: <1.5 A (from V_{MB})

Mechanical

- Operating Temperature: -12 to +55°C (-13 to +131°F)
- Protection: IP 67
- Vibration: 5 g @ 10-500 Hz

Material

- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the system I/O map

Diagnostics (Physical)

- LEDs to indicate status of Network and Module Bus communication

Programmability

- PG in part number designates a programmable gateway
- Progammable according to IEC 61131.3 using CodeSys (includes ladder logic)
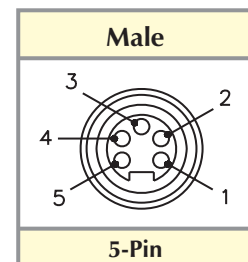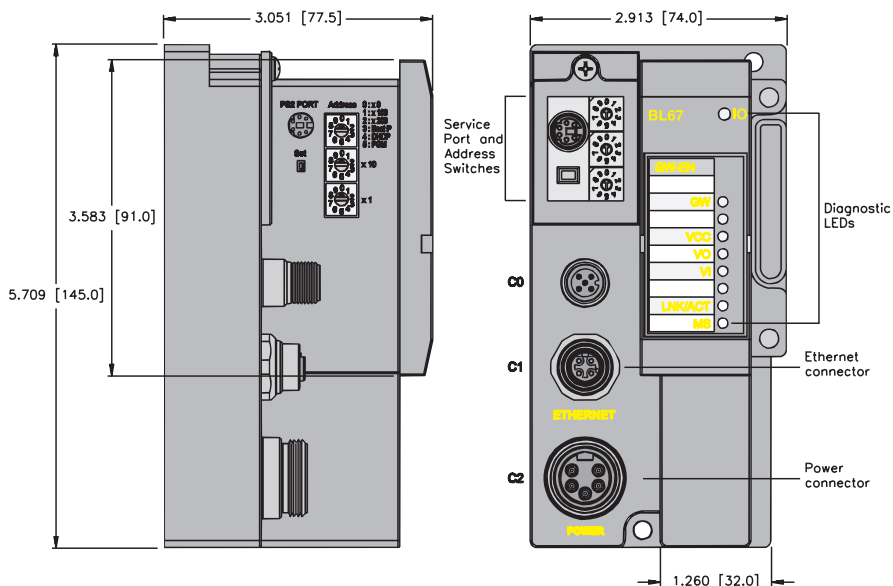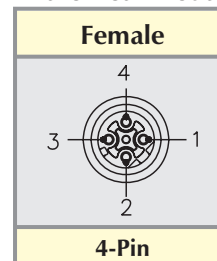- Use CodeSys to create logic programs to control local I/O

Ethernet Pinout

Female
4-Pin

1 = TD+
2 = RD+
3 = TD-
4 = RD-

5-pin *minifast*® Power Pinout

Male
5-Pin

1 = Gnd
2 = Gnd
3 = PE
4 = V_I
5 = V_O

Profinet
Ethernet Gateways

BL67-GW-EN-PN

- Modular I/O
- Fieldbus Independent Configuration
- IP 67 Protection
- Various I/O Styles

Electrical

- Operating Current: <600 mA from V_{MB}
- Input Supply Current: <4 A (from V_I)
- Output Supply Current: <8 A (from V_O)
- Backplane Current: <1.5 A (from V_{MB})

Mechanical

- Operating Temperature: -12 to +55°C (-13 to +131°F)
- Protection: IP 67
- Vibration: 5 g @ 10-500 Hz

Material

- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the system I/O map

Diagnostics (Physical)

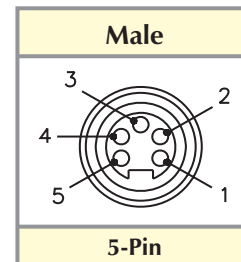- LEDs to indicate status of Network and Module Bus communication

Ethernet Pinout

Female

1 = TD+
2 = RD+
3 = TD-
4 = RD-

4-Pin

5-pin *minifast* ® Power Pinout

Male

1 = Gnd
2 = Gnd
3 = PE
4 = V_I
5 = V_O

5-Pin

PROFIBUS-DP Gateway

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Various I/O Styles**

BL67-GW-DPV1
BL67-PG-DP

Electrical

- Operating Current: <50 mA from V_I
- Supply Current: <10 A to I/O (from V_I and V_O)
- Backplane Current: <1.5 A (from V_I)

Mechanical

- Operating Temperature: -25 to +55°C (+32 to +131°F)
- Protection: IP 67
- Vibration: 5 g @ 10-500 Hz

Material

- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the PROFIBUS-DP interface

Diagnostics (Physical)

- LEDs to indicate status of PROFIBUS-DP and Module Bus communication

Programmability

- PG in part number designates a programmable gateway
- Progammable according to IEC 61131.3 using CodeSys (includes ladder logic)
- Use CodeSys to create logic programs to control local I/O
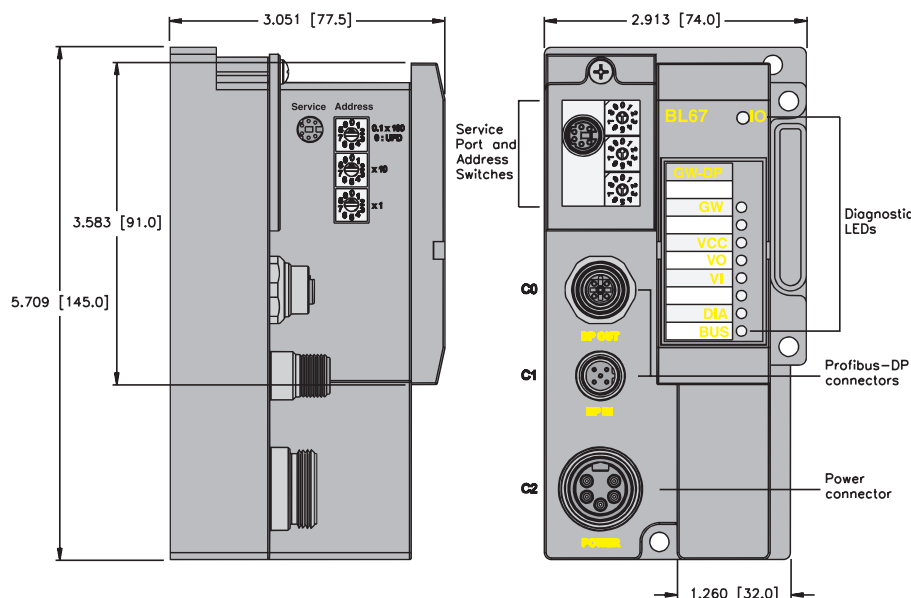
eurofast PROFIBUS Pinouts

Male	Female
5-Pin	5-Pin

1 = 5 VDC*
2 = BUS _A
3 = Gnd
4 = BUS_B

5 = Shield
* Female
   connector only

minifast Power Pinouts

Male
5-Pin

1 = Gnd
2 = Gnd
3 = PE
4 = V_I
5 = V_O

3.051 [77.5]
2.913 [74.0]
3.583 [91.0]
5.709 [145.0]
1.260 [32.0]

Service Address
0.1 x 100
0 : UPD
x10
x1

Service Port and Address Switches

BL67
GW-DP
GW
VCC
VO
VI
DIA
BUS

Diagnostic LEDs

C0
C1
C2

Profibus-DP connectors

Power connector

Note: Power feeding modules may be used for I/O current supply to prevent overloading the gateway power supply.

CANopen Gateway

| • Modular I/O | • IP 67 Protection |
| • Fieldbus Independent Configuration | • Various I/O Styles |

Electrical

- Operating Current: < 600 mA from V_I
- Supply Current: < 10 A to I/O (from V_I and V_O)
- Backplane Current: < 1.5 A (from V_I)

Mechanical

- Operating Temperature: -25 to +55°C (+32 to +131°F)
- Protection: IP 67
- Vibration: 5 g @ 10 to 500 Hz
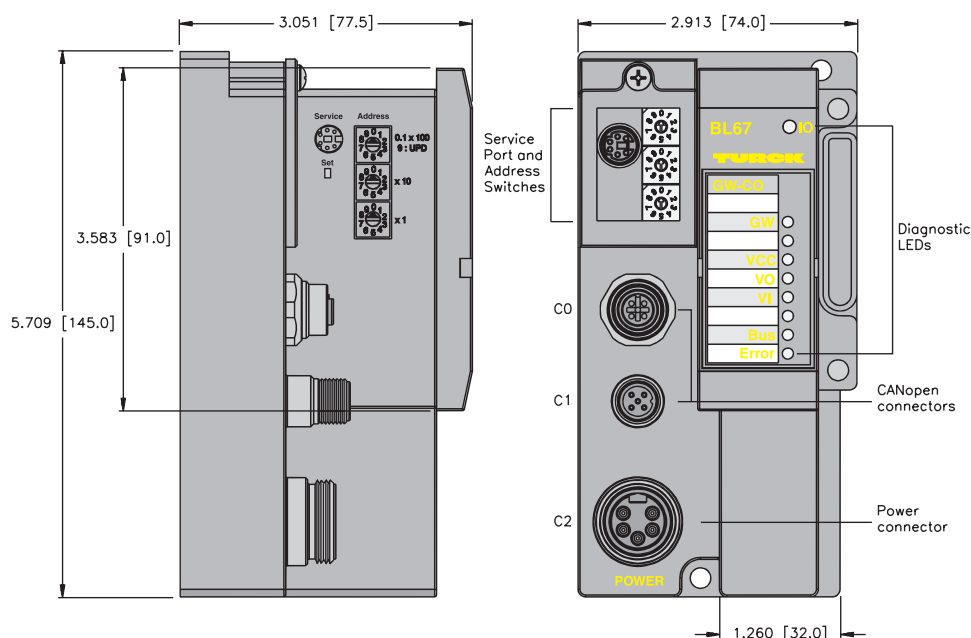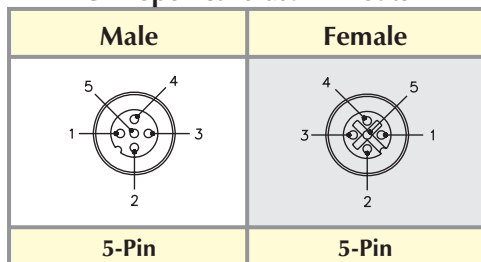
Material

- Housing: PC-V0 (Lexan)

BL67-GW-CO

Diagnostics (Logical)

- Diagnostic information available through the CANopen interface

Diagnostics (Physical)

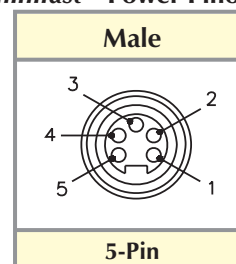- LEDs to indicate status of CANopen and Module Bus communication

CANopen eurofast ® Pinouts

Male	Female
5-Pin	5-Pin

1. = Shield
2. = V+
3. = V-
4. = CAN_H
5. = CAN_L

minifast ® Power Pinouts

Male
5-Pin

1. = Gnd
2. = Gnd
3. = PE
4. = V_I
5. = V_O

Note: Power feeding modules may be used for I/O current supply to prevent overloading the gateway power supply.

CANopen Gateway

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <600 mA from V_{MB}
- Supply Current: <8 A to I/O (from CANopen)
- Backplane Current: <1.5 A (from CANopen)

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
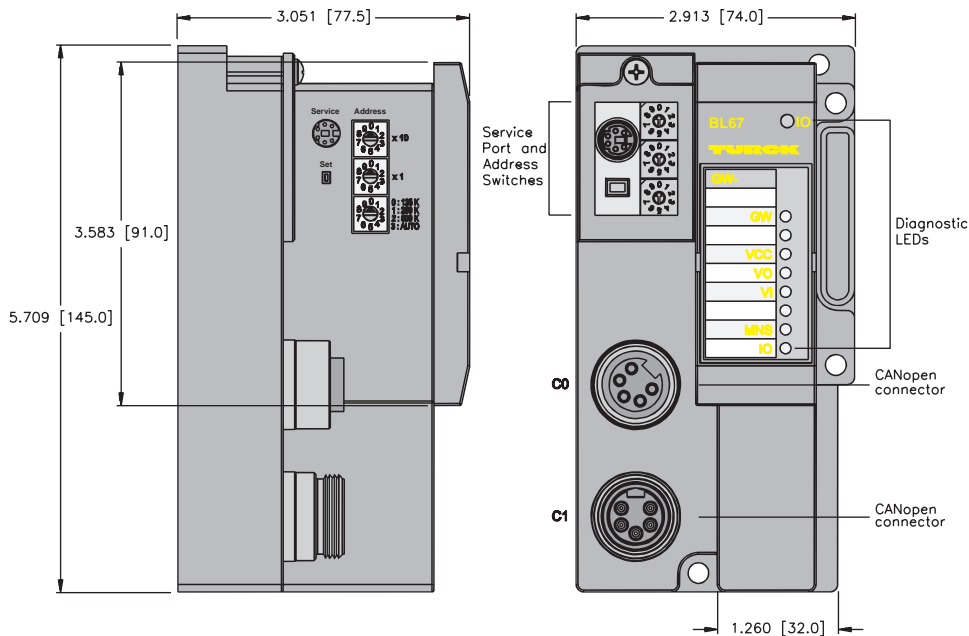- Protection: IP 67
- Vibration: 5 g @ 10-500 Hz

Material

- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the CANopen I/O map

Diagnostics (Physical)

- LEDs to indicate status of CANopen and Module Bus communication

BL67-GW-CO-T

CANopen *minifast* ® Pinouts

Male	Female
5-Pin	5-Pin

1 = Shield
2 = V+
3 = V-
4 = CAN_H
5 = CAN_L

Note: Power feeding modules may be used for I/O current supply to prevent overloading the CANopen power supply.

4 Discrete Input Modules

Shown with BL67-B-4MB base

BL67-4DI-P
BL67-4DI-N

- Modular I/O
- Fieldbus Independent Configuration
- IP 67 Protection
- Various I/O Styles

Electrical

- Operating Current: < 30 mA from V_{MB}
  < 40 mA from V_I (...-P)
  < 1 mA from V_I (...-N)

Power Distribution

- Inputs: V_I
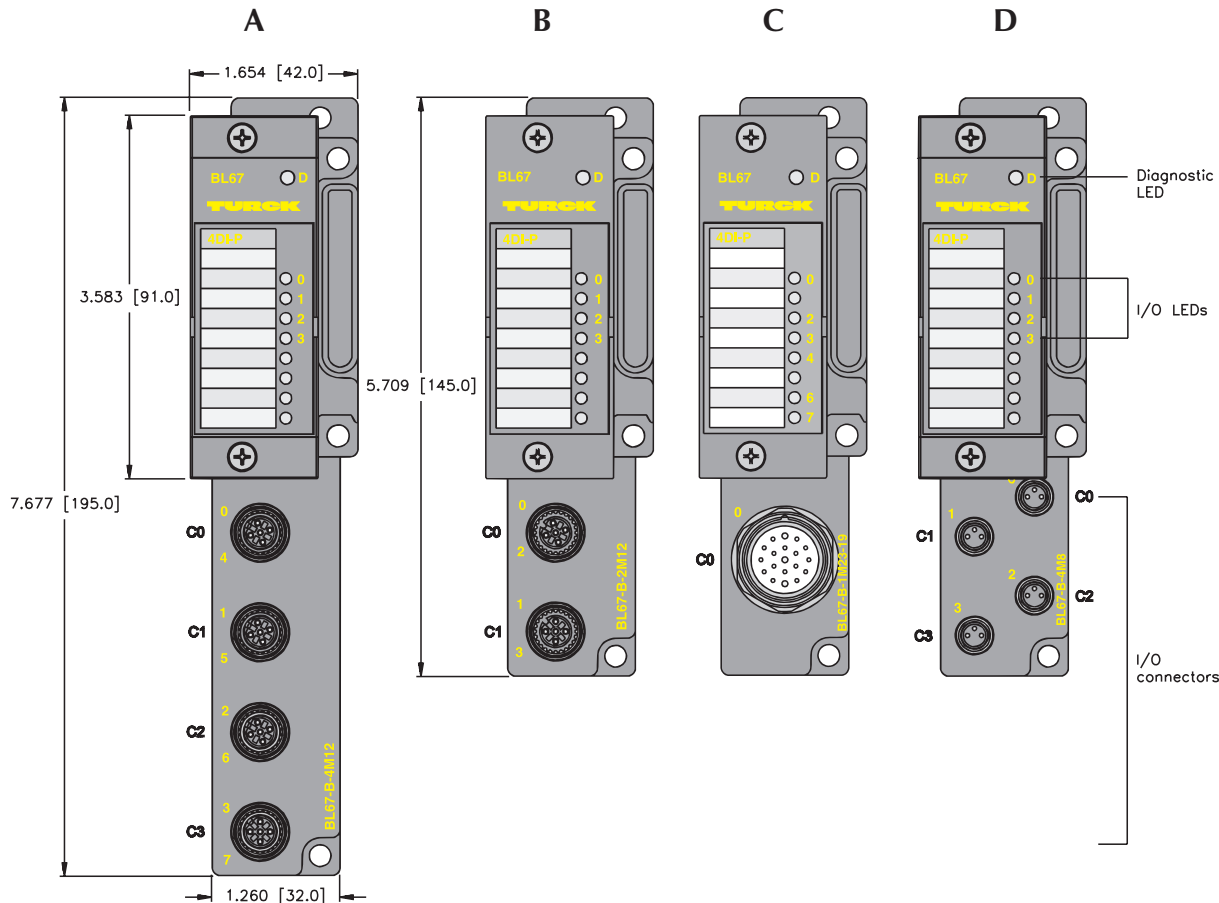- Logic: V_{MB} and V_I

Material

- Connectors: Nickel-plated brass
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway
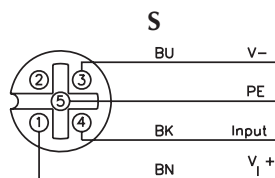
Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
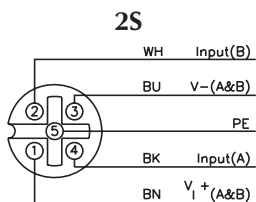- LEDs for each I/O point to indicate on/off status

			Inputs							Data
Part Number	Drawing	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
BL67-4DI-P with BL67-B-4M12*	A	4	0-3	S	1	PNP	X			1
BL67-4DI-P with BL67-B-2M12*	B	4	0-1	2S	2	PNP	X			1
BL67-4DI-P with BL67-B-2M12-P*	B	4	0-1	2S	2	PNP	X			1
BL67-4DI-P with BL67-B-4M8*	D	4	0-3	PI	1	PNP	X			1
BL67-4DI-P with BL67-B-1M23*	C	4	0	M23-4I	4	PNP	X			1
BL67-4DI-N with BL67-B-4M12*	A	4	0-3	S	1	NPN	X			1
BL67-4DI-N with BL67-B-2M12*	B	4	0-1	2N	2	NPN	X			1
BL67-4DI-N with BL67-B-2M12-P*	B	4	0-1	2N	2	NPN	X			1
BL67-4DI-N with BL67-B-4M8*	D	4	0-3	PI	1	NPN	X			1
BL67-4DI-N with BL67-B-1M23*	C	4	0	M23-4I	4	NPN	X			1

*Note: Base modules sold separately. See page G45.

Input Connectors

S

BU — V−
PE
BK — Input
BN — V_I+

Mating cordset:
RK 4.4T-*-RS 4.4T

2S

WH — Input(B)
BU — V−(A&B)
PE
BK — Input(A)
BN — V_I+(A&B)

Mating cordset:
RK 4.4T-*-RS 4.4T

Splitter:
VBRS 4.4-2RK 4T-*/*

2N

WH — Input(B)
BU — V−(A&B)
PE
BK — Input(A)
BN — V_I+(A&B)

Mating cordset:
RK 4.5T-*-RS 4.5T

PI

BU — V−
BK — Input
BN — V_I+

Mating cordset:
PSG 3M-*

M23-4I

1=$Input_0$
2=$Input_1$
3=$Input_2$
4=$Input_3$
5=NC
6=NC
7=NC
8=NC
9=VI+
10=VI+
11=VI+
12=V-

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n−1	(Data from modules to the left)							
	n	Data from next discrete modules				I-3	I-2	I-1	I-0
	n+1	(Data from modules to the right)							

8 Discrete Input Modules

Shown with BL67-B-4M12 base

BL67-8DI-P
BL67-8DI-N

- Modular I/O
- Fieldbus Independent Configuration
- IP 67 Protection
- Various I/O Styles

Electrical

- Operating Current: <30 mA from V_{MB}
  <40 mA from V_I (...-P)
  <1 mA from V_I (...-N)

Power Distribution

- Inputs: V_I
- Logic: V_{MB}

Mechanical

- Operating Temperature: 0 to $+55°$C ($+32$ to $+131°$F)
- Protection: NEMA 1,3,4,12,13 / IEC IP 67
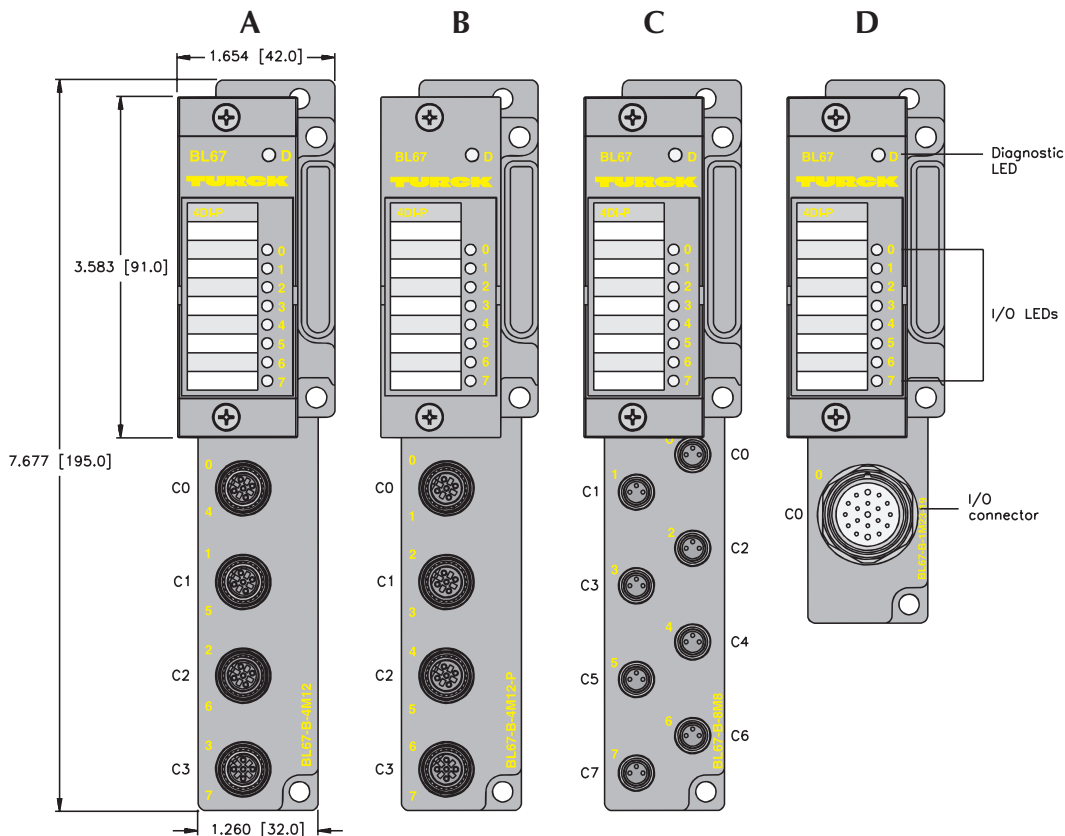- Vibration:

Material

- Connectors: Nickel-plated brass
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
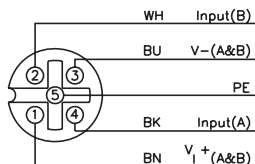- LEDs for each I/O point to indicate on/off status

	Inputs									Data
Part Number	Drawing	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
BL67-8DI-P with BL67-B-4M12*	A	8	0-3	2S	2	PNP	X			1
BL67-8DI-P with BL67-B-4M12-P*	B	8	0-3	2S	2	PNP	X			1
BL67-8DI-P with BL67-B-8M8*	C	8	0-7	PI	1	PNP	X			1
BL67-8DI-P with BL67-B-1M23	D	8	0	M23-8I	8	PNP	X			1
BL67-8DI-N with BL67-B-4M12*	A	8	0-3	2N	2	NPN	X			1
BL67-8DI-N with BL67-B-4M12-P*	B	8	0-3	2N	2	NPN	X			1
BL67-8DI-N with BL67-B-8M8*	C	8	0-7	PI	1	NPN	X			1
BL67-8DI-N with BL67-B-1M23	D	8	0	M23-8I	8	NPN	X			1

*Note: Base modules sold separately. See page G45.

Input Connectors

2S

WH   Input(B)
BU   V−(A&B)
PE
BK   Input(A)
BN V_I+(A&B)

Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

2N

WH   Input(B)
BU   V−(A&B)
PE
BK   Input(A)
BN V_I+(A&B)

Mating cordset:
RK 4.5T-*-RS 4.5T

PI

BU   V−
BK   Input
BN V_I+
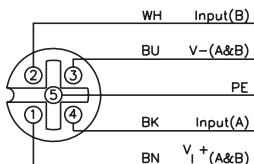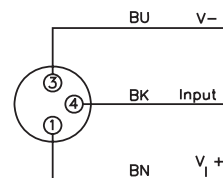
Mating cordset:
PSG 3M-*

M23-8I
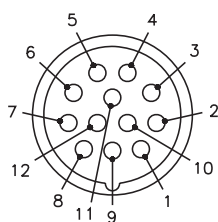
1 = $Input_0$
2 = $Input_1$
3 = $Input_2$
4 = $Input_3$
5 = $Input_4$
6 = $Input_5$
7 = $Input_6$
8 = $Input_7$
9 = V_I+
10 = V_I+
11 = V_I+
12 = V-

Application:
TURCK splitter box: 8MB12Z-4PZ-CS12
Cable: CSWM CKWM 12-10-*/S101/BL67

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n−1	(Data from modules to the left)							
	n	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	n+1	(Data from modules to the right)							

4 Discrete Output Modules

Shown with BL67-B-4M12 base

BL67-4DO-0.5A-P

UL CE CSA

Electrical
- Operating Current: <30 mA from V_{MB}
  <100 mA from V_O
- Output Current: <0.5 A per output from V_O

Power Distribution
- Outputs: V_O
- Logic: V_{MB} and V_O

Material
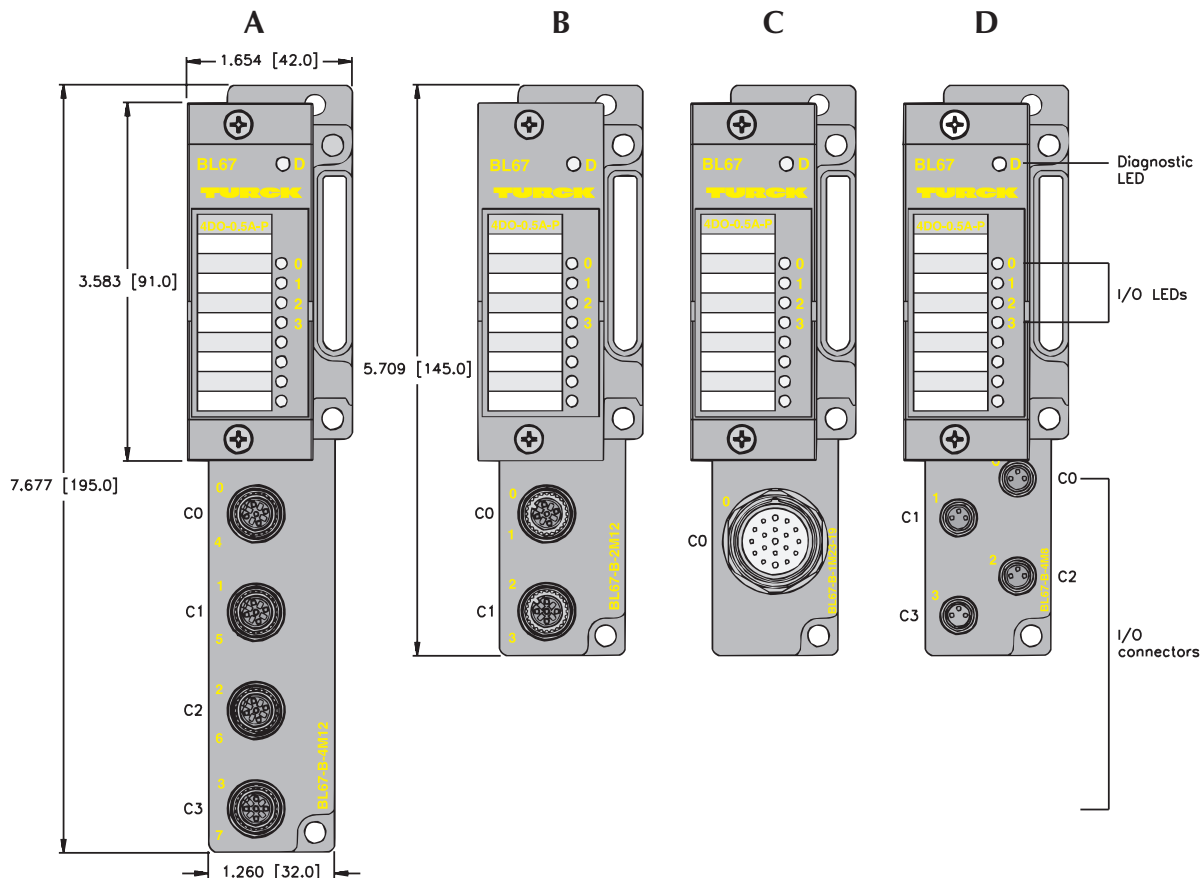- Connectors: Nickel-plated brass
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)
- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)
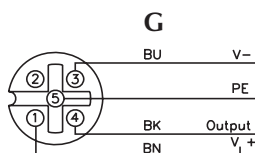- LED to indicate module bus communication status as well as I/O diagnostics
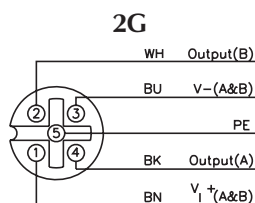- LEDs for each I/O point to indicate on/off status

Part Number	Drawing	Output Count	Connectors	Pinout	Outputs per Connector	Current	Style	Individual Diagnostics	I/O Map
BL67-4D0-0.5A-P with BL67-B-4M12*	A	4	0-3	G	1	0.5 A	Source		1
BL67-4D0-0.5A-P with BL67-B-2M12*	B	4	0-1	2G	2	0.5 A	Source		1
BL67-4D0-0.5A-P with BL67-B-2M12-P*	B	4	0-1	2G	2	0.5 A	Source		1
BL67-4D0-0.5A-P with BL67-B-4M8*	D	4	0-3	PO	1	0.5 A	Source		1
BL67-4D0-0.5A-P with BL67-B-1M23*	C	4	0	M23-4O	4	0.5 A	Source		1

*Note: Base modules sold separately. See page G45.

Output Connectors

G

BU   V−
      PE
BK   Output
BN $V_I +$

Mating cordset:
RK 4.4T-*-RS 4.4T

2G

WH   Output(B)
BU   V−(A&B)
      PE
BK   Output(A)
BN $V_I +$(A&B)

Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

PO

BU   V−
BK   Output
BN $V_I +$

Mating cordset:
PSG 3M-*

M23-4O

1 = $Output_0$
2 = $Output_1$
3 = $Output_2$
4 = $Output_3$
5 = NC
6 = NC
7 = NC
8 = NC
9 = VI+
10 = VI+
11 = VI+
12 = V-

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	n−1	(Data for modules to the left)							
	n	Data for next discrete modules				0-3	0-2	0-1	0-0
	n+1	(Data for modules to the right)							

4 Discrete Output Modules

Shown with BL67-B-2M12 base

BL67-4DO-2A-P

BL67-4DO-2A-N

(UL) CE (SA)

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <30 mA from V_{MB}
  <100 mA from V_O
- Output Current: <2 A per output from V_O

Power Distribution

- Outputs: V_O
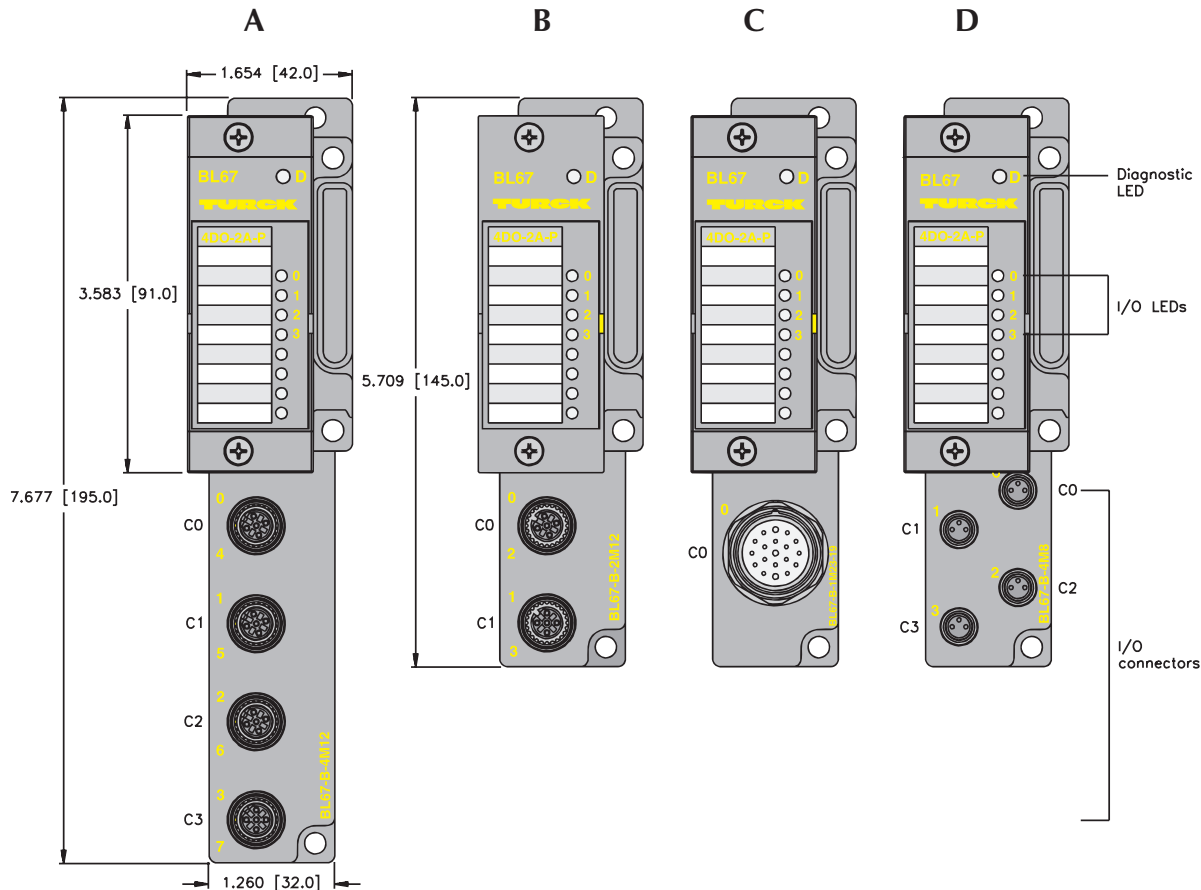- Logic: V_{MB} and V_O

Material

- Connectors: Nickel-plated brass
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

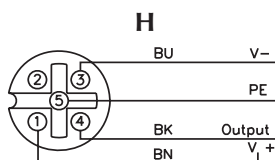- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
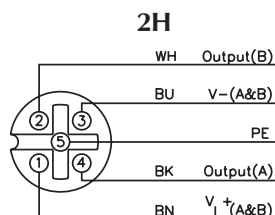- LEDs for each I/O point to indicate on/off status

| | Outputs | | | | | | | Data |

Part Number	Drawing	Output Count	Connectors	Pinout	Outputs per Connector	Current	Style	Individual Diagnostics	I/O Map
BL67-4DO-2A-P with BL67-B-4M12*	A	4	0-3	H	1	2 A	Source		1
BL67-4DO-2A-P with BL67-B-2M12*	B	4	0-1	2H	2	2 A	Source		1
BL67-4DO-2A-P with BL67-B-2M12-P*	C	4	0-1	2H	2	2 A	Source		1
BL67-4DO-2A-P with BL67-B-4M8*	D	4	0-3	PO	1	2 A	Source		1
BL67-4DO-2A-P with BL67-B-1M23*	C	4	0	M23-4O	4	2 A	Source		1
BL67-4DO-2A-N with BL67-B-4M12*	A	4	0-3	H	1	2 A	Sink		1
BL67-4DO-2A-N with BL67-B-2M12*	B	4	0-1	2H	2	2 A	Sink		1
BL67-4DO-2A-N with BL67-B-2M12-P*	C	4	0-1	2H	2	2 A	Sink		1
BL67-4DO-2A-N with BL67-B-4M8*	D	4	0-3	PO	1	2 A	Sink		1
BL67-4DO-2A-N with BL67-B-1M23*	C	4	0	M23-4O	4	2 A	Sink		1

* Base modules sold separately. See page G45.

Output Connectors

H

BU V−
PE
BK Output
BN V_I+

Mating cordset:
RK 4.5T-*-RS 4.5T

2H

WH Output(B)
BU V−(A&B)
PE
BK Output(A)
BN V_I+(A&B)

Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

PO

BU V−
BK Output
BN V_I+

Mating cordset:
PSG 3M-*

M23-4O

1 = $Output_0$
2 = $Output_1$
3 = $Output_2$
4 = $Output_3$
5 = NC
6 = NC
7 = NC
8 = NC
9 = VI+
10 = VI+
11 = VI+
12 = V-

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	n−1	(Data for modules to the left)							
	n	Data for next discrete modules				0-3	0-2	0-1	0-0
	n+1	(Data for modules to the right)							

8 Discrete Output Modules

Shown with BL67-B-8MB base

BL67-8DO-0.5A-P

Electrical
- Operating Current: <30 mA from V_{MB}
  <100 mA from V_O
- Output Current: <0.5 A per output from V_O

Power Distribution
- Outputs: V_O
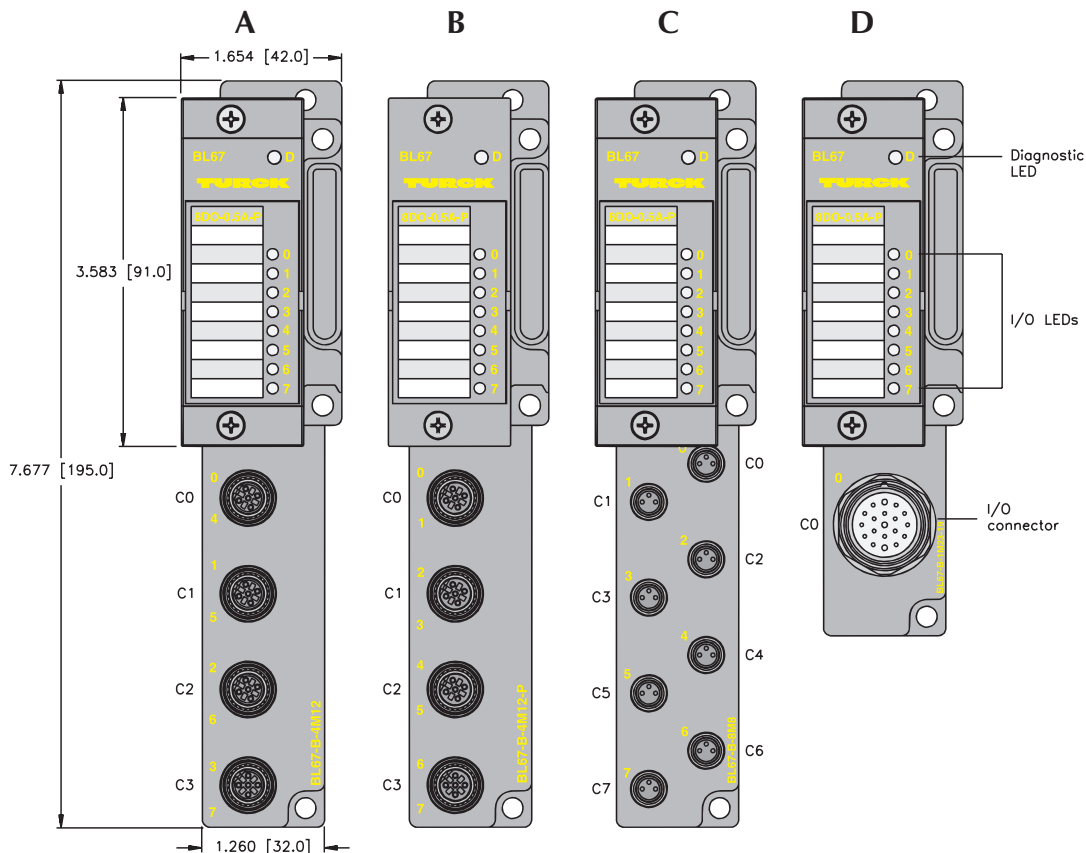- Logic: V_{MB} and V_O

Material
- Connectors: Nickel-plated brass
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)
- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)
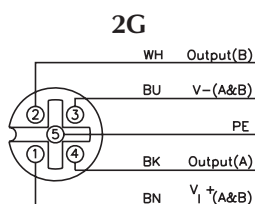- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status

A   B   C   D

1.654 [42.0]

3.583 [91.0]

7.677 [195.0]

1.260 [32.0]

Diagnostic LED

I/O LEDs

I/O connector

		Outputs							Data

Part Number	Drawing	Output Count	Connectors	Pinout	Outputs per Connector	Current	Style	Individual Diagnostics	I/O Map
BL67-8DO-0.5A-P with BL67-B-4M12*	A	8	0-3	2G	2	0.5 A	Source		1
BL67-8DO-0.5A-P with BL67-B-4M12-P*	B	8	0-3	2G	2	0.5 A	Source		1
BL67-8DO-0.5A-P with BL67-B-8M8*	C	8	0-7	PO	1	0.5 A	Source		1
BL67-8DO-0.5A-P with BL67-B-1M23	D	8	0	M23-4O	4	0.5 A	Source		1

* Base modules sold separately. See page G45.

Output Connectors

2G

WH   Output(B)
BU   V−(A&B)
PE
BK   Output(A)
BN V_I^+(A&B)

Mating cordset:
  RK 4.4T-*-RS 4.4T
Splitter:
  VBRS 4.4-2RK 4T-*/*

PO

BU   V−
BK   Output
BN V_I^+

Mating cordset:
  PSG 3M-*

M23-8O

1 = $Output_0$
2 = $Output_1$
3 = $Output_2$
4 = $Output_3$
5 = $Output_4$
6 = $Output_5$
7 = $Output_6$
8 = $Output_7$
9 = VI+
10 = VI+
11 = VI+
12 = V-

Application:
TURCK splitter box: 8MB12Z-4PZ-CS12
Cable: CSWM CKWM 12-10-*/S101/BL67

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Out	n−1	(Data for modules to the left)							
	n	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0
	n+1	(Data for modules to the right)							

16 Discrete Output Module

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Valve Bank Module**

Shown with BL67-8-1M23 base

BL67-16DO-0.1A-P

Electrical

- Operating Current: <30 mA from V_{MB}
  <100 mA from V_O
- Output Current: <0.5 A per output from V_O

Power Distribution

- Outputs: V_O
- Logic: V_{MB} and V_O

Material
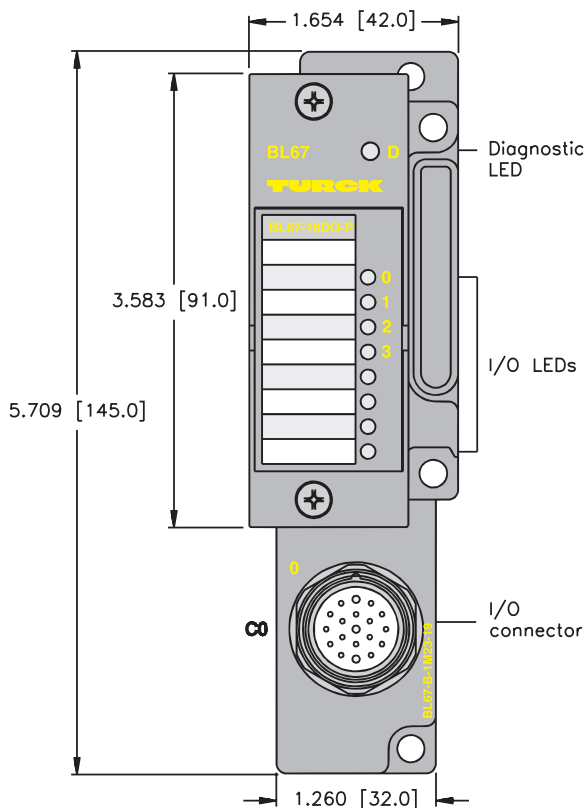
- Connectors: Nickel-plated brass
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status

1.654 [42.0]

BL67

TURCK

BL67-16DO-P

Diagnostic LED

I/O LEDs

3.583 [91.0]

5.709 [145.0]

0

C0

I/O connector

1.260 [32.0]

Note: For connection to SMC valve blocks use CSM DB25 19-17-*/SMC (* indicates the length in meters). This cordset connects from the BL67 19-pin base to a DB25 connector, and is wired for SMC valve connections.

					Outputs					Data
Part Number	*Drawing*	*Output Count*	*Connectors*	*Pinout*	*Outputs per Connector*	*Current*	*Style*	*Individual Diagnostics*	*I/O Map*	
BL67-16DO-0.1-P with BL67-B-1M23-19	A	16	0	M23-16O	16	0.1 A	Source		1	

* Base modules sold separately. See page G45.

Output Connectors

M23-16O
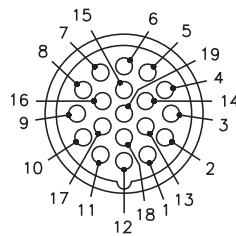
1 = Output$_{14}$	11 = Output$_{12}$
2 = Output$_{10}$	12 = PE
3 = Output$_{6}$	13 = Output$_{11}$
4 = Output$_{3}$	14 = Output$_{7}$
5 = Output$_{2}$	15 = Output$_{0}$
6 = V-	16 = Output$_{4}$
7 = Output$_{1}$	17 = Output$_{8}$
8 = Output$_{5}$	18 = Output$_{15}$
9 = Output$_{9}$	19 = VI+
10 = Output$_{13}$	

Applications:

- **SMC Valve Blocks; CSM DB25 19-17-*/SMC**
- **MAC Valve Blocks; CSM DBK 25 19-17-*/MAC**
- **16MB12-4P2-CS19[1]; CSM CKM 19-19-0-*/S101**

* Indicates lenght in meters.

[1] Splitter box, refer to Connectivity Catalog for more information
Note: TURCK cannot guarantee pinout pinout of connecting devices. Please verify pinout is correct for your application.

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	n–1	(Data for modules to the left)							
Out	n	O-7	O-6	O-5	O-4	O-3	O-2	O-1	O-0
	n+1	O-15	O-14	O-13	O-12	O-11	O-10	O-9	O-8
	n+2	(Data for modules to the right)							

Deluxe 4 Discrete Input Module

Shown with BL67-B-4M8 base

BL67-4DI-PD

- **Modular I/O**
- **Per Point Diagnostics**
- **IP 67 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <30 mA from V_{MB}
  <100 mA from V_I

Power Distribution

- Inputs: V_I
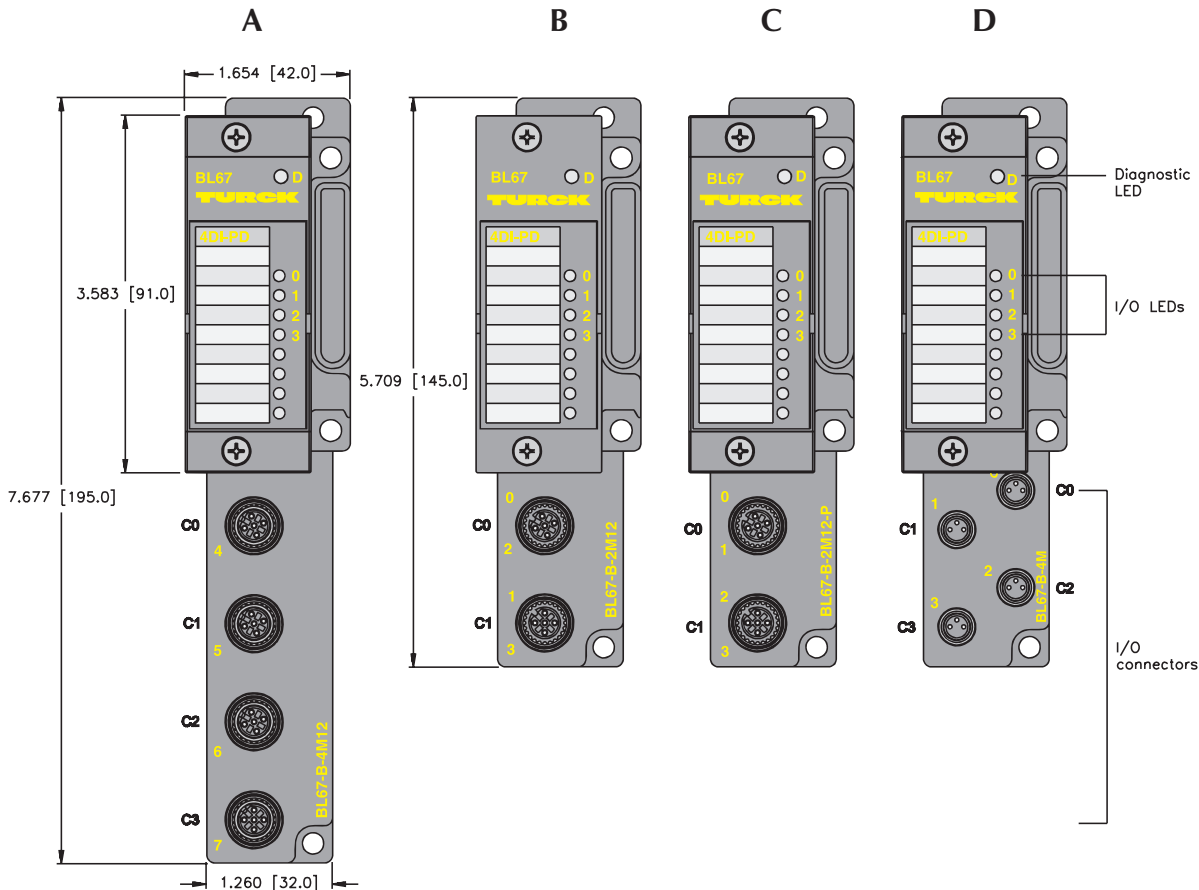- Logic: V_{MB} and V_I

Material

- Connectors: Nickel-plated brass
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

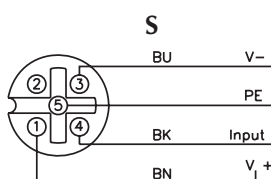- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
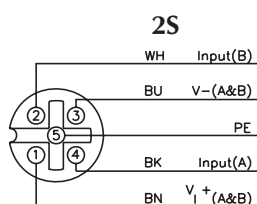- LEDs for each I/O point to indicate on/off status

		Inputs							Data

Part Number	Drawing	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Individual Diagnostics	Wire-Break Detection	I/O Map
BL67-4DI-PD with BL67-B-4M12*	A	4	0-3	S	1	PNP	X	X	1
BL67-4DI-PD with BL67-B-2M12*	B	4	0-1	2S	2	PNP	X		1
BL67-4DI-PD with BL67-B-2M12-P*	C	4	0-1	2S	2	PNP	X		1
BL67-4DI-PD with BL67-B-4M8*	D	4	0-3	PI	1	PNP	X		1

* Base modules sold separately. See page G45.

Input Connectors

S

BU   V−
PE
BK   Input
BN V_I +

Mating cordset:
RK 4.4T-*-RS 4.4T

2S

WH   Input(B)
BU   V−(A&B)
PE
BK   Input(A)
BN V_I +(A&B)

Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

PI

BU   V−
BK   Input
BN V_I +
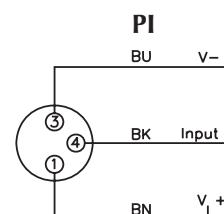
Mating cordset:
PSG 3M-*

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n−1	(Data from modules to the left)							
	n	Data from next discrete modules				I-3	I-2	I-1	I-0
	n+1	(Data from modules to the right)							

Note: I/O faults can be reported in the I/O map. Consult the product user manual for details.

BL67

Deluxe 8 Discrete Input Module

- **Modular I/O**
- **Per Point Diagnostics**
- **IP 67 Protection**
- **Various I/O Styles**

Shown with BL67-B-4M12 base

BL67-8DI-PD

Electrical

- Operating Current: <30 mA from V_{MB}
  <100 mA from V_I

Power Distribution

- Inputs: V_I
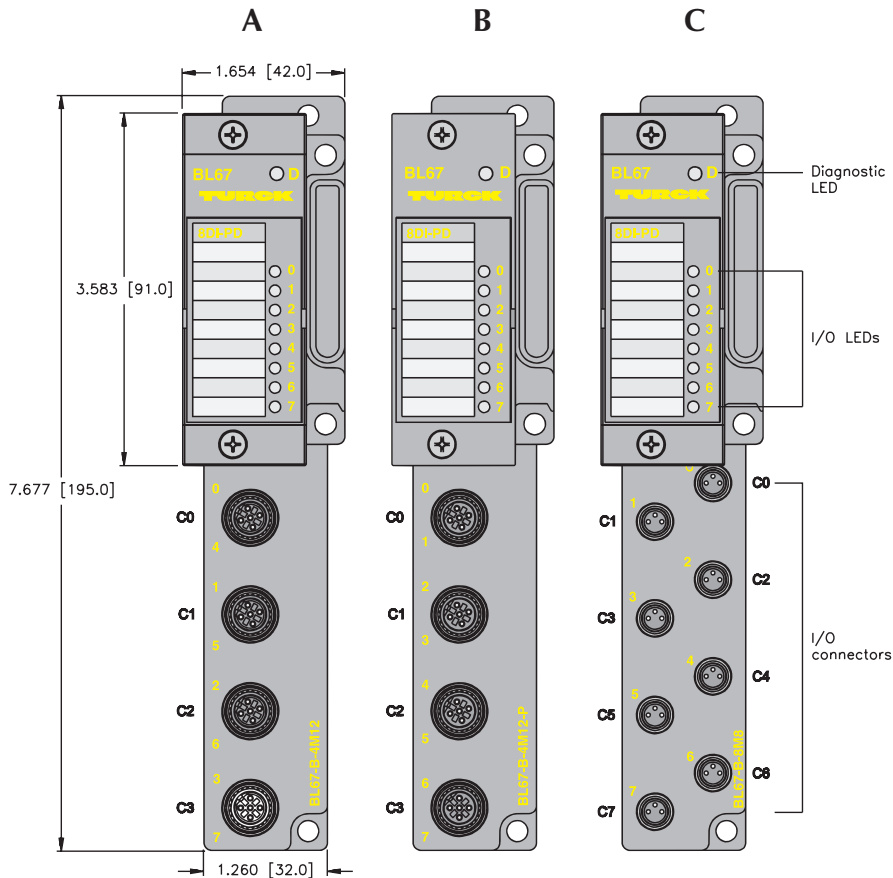- Logic: V_{MB} and V_I

Material

- Connectors: Nickel-plated brass
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status

A   B   C

1.654 [42.0]

3.583 [91.0]

7.677 [195.0]

1.260 [32.0]

Diagnostic LED

I/O LEDs

I/O connectors

		Inputs							Data

Part Number	Drawing	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Individual Diagnostics	Wire-Break Detection	I/O Map
BL67-8DI-PD with BL67-B-4M12*	A	8	0-3	2S	2	PNP	X	X	1
BL67-8DI-PD with BL67-B-4M12-P*	B	8	0-3	2S	2	PNP	X		1
BL67-8DI-PD with BL67-B-8M8*	C	8	0-7	PI	1	PNP	X		1

*Note: Base modules sold separately. See page G45.

Input Connectors

2S

WH   Input(B)
BU   V−(A&B)
PE
BK   Input(A)
BN V_I +(A&B)
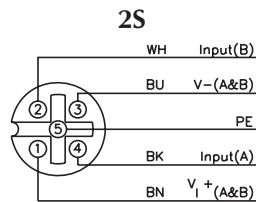
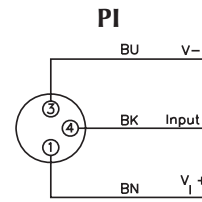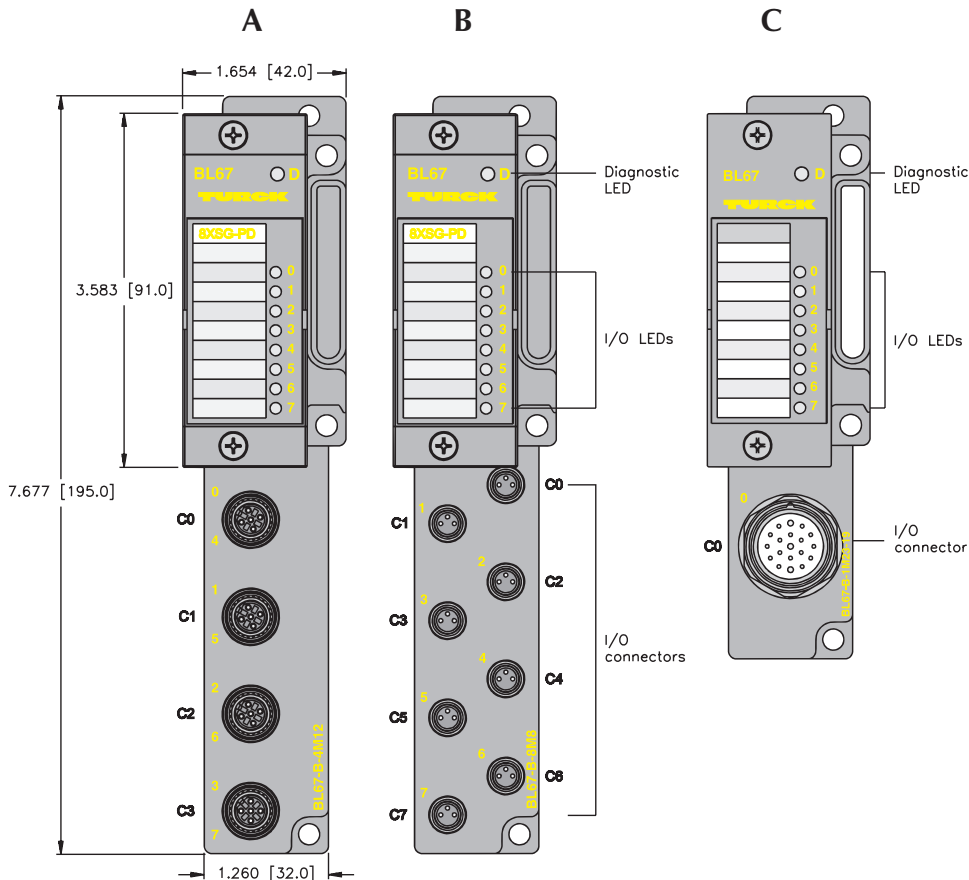**Mating cordset:**
   RK 4.4T-*-RS 4.4T
Splitter:
   VBRS 4.4-2RK 4T-*/*

Note: Pins 1 & 2 must be jumpered together for open circuit monitoring.

PI

BU   V−
BK   Input
BN V_I +

Mating cordset:
   PSG 3M-*

I/O Data Map 1

In	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	n−1	(Data from modules to the left)							
	n	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	n+1	(Data from modules to the right)							

Note: I/O faults can be reported in the I/O table. Consult the product user manual for details.

Discrete Input/Output Module

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Various I/O Styles**

Shown with BL67-B-4M12 base

BL67-8XSG-PD

Electrical

- Operating Current: <30 mA from V_{MB}
  <100 mA from V_O
- Output Current: <0.5 A per output from V_O

Power Distribution

- Inputs: V_I
- Outputs: V_O
- Logic: V_{MB} and V_O

Material

- Connectors: Nickel-plated brass
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
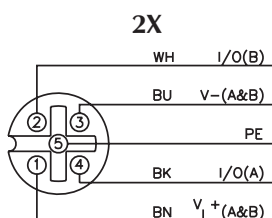- LEDs for each I/O point to indicate on/off status

A   B   C

Part Number	Drawing	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	VI+ Available Current	Individual Diagnostics	Wire-Break Detection	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break Detection	I/O Map
		Inputs								**Outputs**							**Data**
BL67-8XSG-PD with BL67-B-4M12*	A	8	0-3	2X	2	PNP		X		8	0-3	2X	2	0.5 A	X		1
BL67-8XSG-PD with BL67-B-8M8*	B	8	0-7	PI	1	PNP		X		8	0-7	PO	1	0.5 A	X		1
BL67-8XSG-PD with BL67-B-1M23	C	8	0	M23	8	PNP	80 mA each			8	0	M23	8	0.5 A	X		1
BL67-8XSG-PD with BL67-B-1M23-VI*	C	8	0	M23	8	PNP	4 A total			8	0	M23	8	0.5 A	X		1

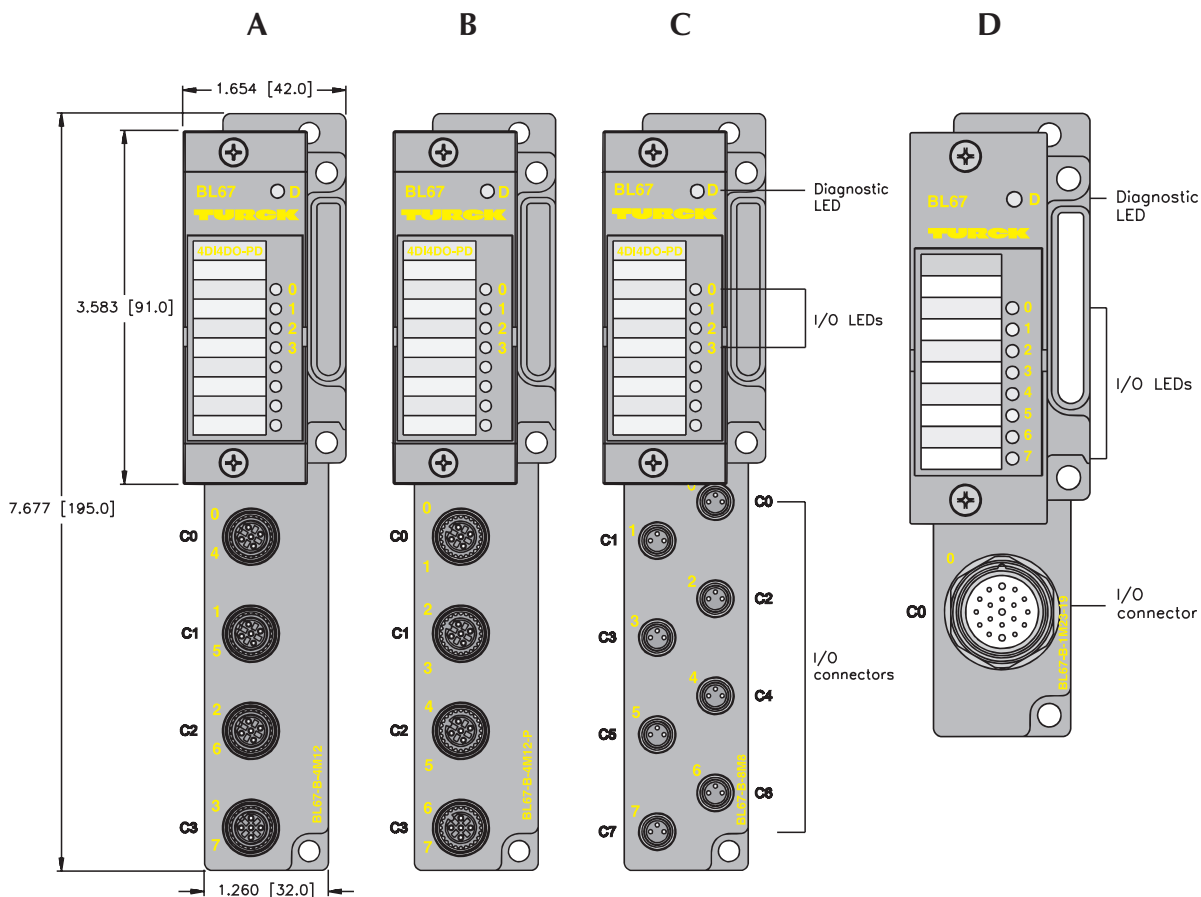* Base modules sold separately. See page G45.

Input/Output Connectors

2X

WH — I/O(B)
BU — V−(A&B)
PE
BK — I/O(A)
BN — $V_I{+}$(A&B)

Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

PI

BU — V−
BK — Input
BN — $V_I{+}$

Mating cordset:
PSG 3M-*

M23

1 = Output_0
2 = Output_1
3 = Output_2
4 = Output_3
5 = Output_4
6 = Output_5
7 = Output_6
8 = Output_7
9 = VI+
10 = VI+
11 = VI+
12 = V-

Application:
TURCK splitter box: 8MB12Z-4PZ-CS12
Cable: CSWM CKWM 12-10-*/S101/BL67

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n−1	(Data from modules to the left)							
	n	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	n+1	(Data from modules to the right)							
Out	n−1	(Data for modules to the left)							
	n	0-7	0-6	0-5	0-4	0-3	0-2	0-1	0-0
	n+1	(Data for modules to the right)							

Note: I/O faults can be reported in the I/O table. Consult the product user manual for details.

BL67

Deluxe 4 Discrete Input
4 Discrete Output Module

Shown with BL67-B-4M12 base

BL67-4DI4DO-PD

UL CE CSA

- **Modular I/O**
- **Per Point Diagnostics**
- **IP 67 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <30 mA from V_{MB}
  <100 mA from V_O
- Output Current: <0.5 A per channel from V_O

Power Distribution

- Inputs: V_I
- Outputs: V_O
- Logic: V_{MB} and V_O

Material

- Connectors: Nickel-plated brass
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
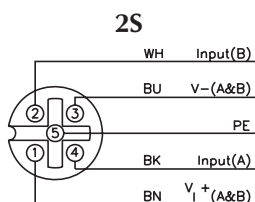- LEDs for each I/O point to indicate on/off status

A   B   C   D

1.654 [42.0]

3.583 [91.0]

7.677 [195.0]

1.260 [32.0]

Diagnostic LED

I/O LEDs

Diagnostic LED

I/O LEDs

I/O connectors

I/O connector

Part Number	Drawing #	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	VI+ Available Current	Group Diagnostics	Individual	Wire-Break Detection	Output Count	Connectors	Pinout	Outputs per Connector	Current	Individual Diagnostics	Wire-Break	I/O Map
				Inputs										Outputs				Data
BL67-4DI4DO-PD with BL67-B-4M12-P*	A	4	0-1	2S	2	PNP			X		4	2-3	2G	2	0.5 A	X		1
BL67-4DI4DO-PD with BL67-B-4M12*	B	4	0-3	C	1	PNP			X		4	0-3	C	1	0.5 A	X		1
BL67-4DI4DO-PD with BL67-B-8M8*	C	4	0-3	PI	1	PNP			X		4	4-7	PO	1	0.5 A	X		1
BL67-4DI4DO-PD with BL67-B-1M23*	D	4	0	M23	4	PNP	80 mA each				4	0	M23	4	0.5 A			1
BL67-4DI4DO-PD with BL67-B-1M23*	D	4	0	M23	4	PNP	4 A total				4	0	M23	4	0.5 A			1

* Base modules sold separately. See page G45.

Input/Output Connectors

2S

WH — Input(B)
BU — V−(A&B)
— PE
BK — Input(A)
BN — V_I+(A&B)

Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

2G

WH — Output(B)
BU — V−(A&B)
— PE
BK — Output(A)
BN — V_I+(A&B)

Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VBRS 4.4-2RK 4T-*/*

PI

BU — V−
BK — Input
BN — V_I+

Mating cordset:
PSG 3M-*

C
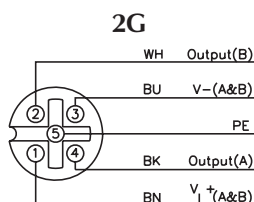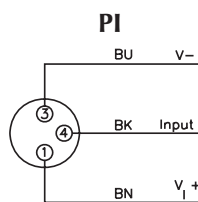
WH — Output
BU — V−
— PE
BK — Input
BN — V_I+
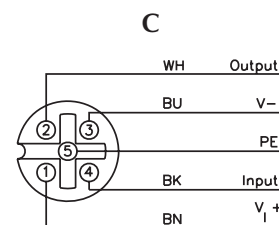
Mating cordset:
RK 4.4T-*-RS 4.4T
Splitter:
VB2-RS 4.4T-1/2RK 4.4T-*/*/S651

M23
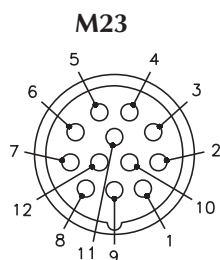
1 = $Input_0$
2 = $Input_1$
3 = $Input_2$
4 = $Input_3$
5 = $Output_0$
6 = $Output_1$
7 = $Output_2$
8 = $Output_3$
9 = V_I+
10 = V_I+
11 = V_I+
12 = V-

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n−1	(Data from modules to the left)							
	n	Data from next discrete modules				I-3	I-2	I-1	I-0
	n+1	(Data from modules to the right)							
Out	n−1	(Data for modules to the left)							
	n	(Data for next discrete modules)				0-3	0-2	0-1	0-0
	n+1	(Data for modules to the right)							

Note: I/O faults can be reported in the I/O table. Consult the product user manual for details.

CANopen Interface Module

BL67-1CVI

(UL) CE (SA·)

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: $<$30 mA from V_{MB} (SSI)
  $<$50 mA from V (all)
  $<$100 mA from V supply

Power Distribution

- I/O: V_I
- Logic: V_{MB} and V_I

Material

- Connectors: Nickel-plated brass
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status

Functional Description

- Connect up to 8 CANopen slaves to this module
- Map the slaves into any available fieldbus

1.260 [32.0]

3.583 [91.0]

Industrial Automation
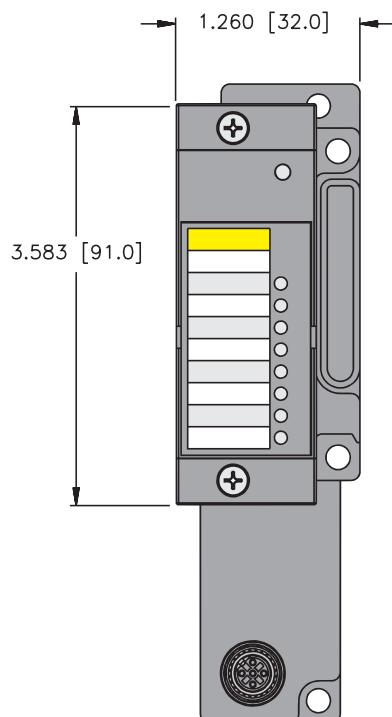
		Inputs						Data
Part Number	Drawing	Slaves	Connectors	Pinout	Bytes/Slave	Max. Baud Rate	Group Diagnostics	I/O Map
BL67-1CVI with BL67-B-1M12	A	8	0	2S	1	1 mbits/S	X	1

* Base modules sold separately. See page G45.

Input Connectors

2S

WH	Input(B)
BU	V−(A&B)
	PE
BK	Input(A)
BN	V_I+(A&B)
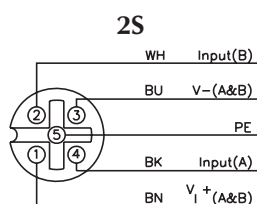
Mating cordset:
RK 4.4T-*-RS 4.4T

Splitter:
VBRS 4.4-2RK 4T-*/*

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	1		Slave 2				Slave 1		
	2		Slave 4				Slave 3		
	3		Slave 6				Slave 5		
	4		Slave 7				Slave 8		
Out	5		Slave 2				Slave 1		
	6		Slave 4				Slave 3		
	7		Slave 6				Slave 5		
	8		Slave 7				Slave 8		

Serial Communication Modules

BL67-1RS485/422
BL67-1RS232
BL67-1SSI

- Modular I/O
- Fieldbus Independent Configuration
- IP 67 Protection
- Various I/O Styles

Electrical

- Operating Current: <140 mA from V_{MB} (RS232)
  <60 mA from V_{MB} (RS485/422)
  <50 mA from V_{MB} (SSI)
  <50 mA from V (all)

Power Distribution
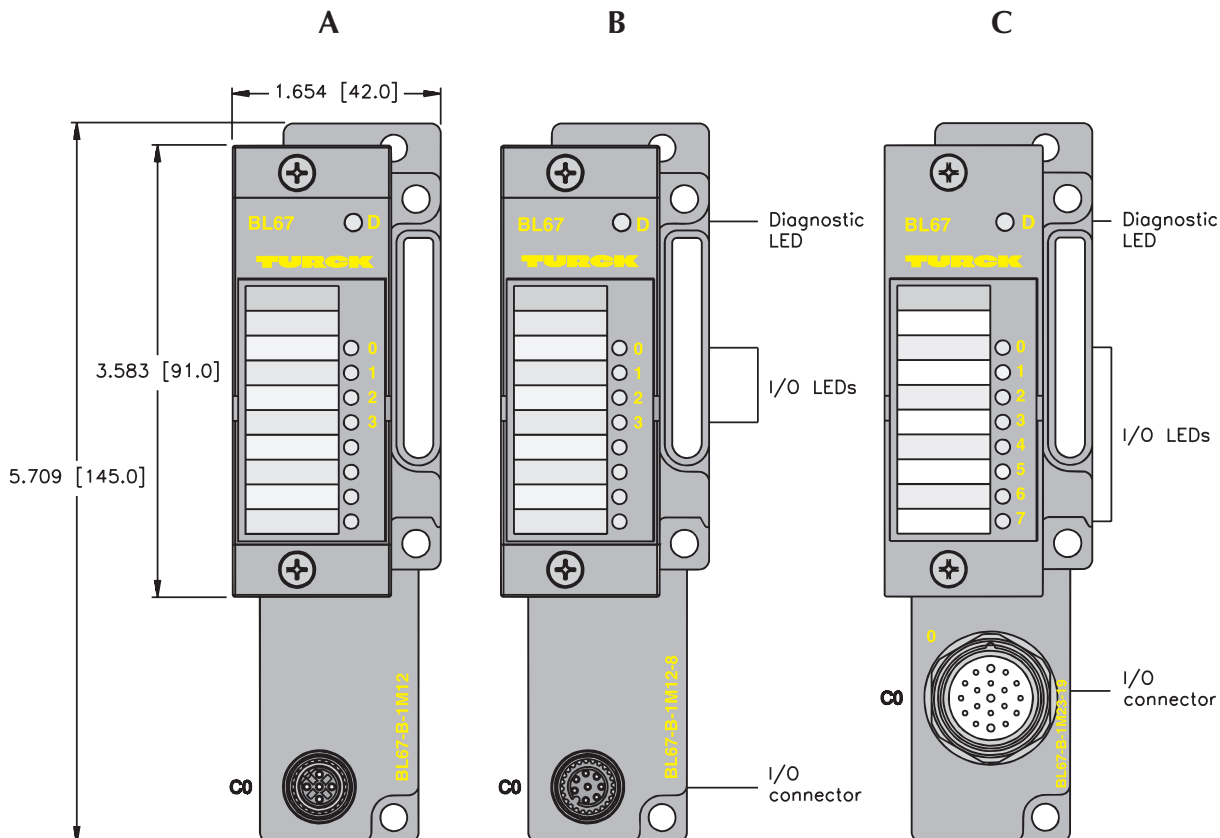
- I/O: V
- Logic: V_{MB} and V

Material

- Connectors: Nickel-plated brass
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status

A **B** **C**

			Inputs					Outputs				Data
Part Number	Drawing	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Output Count	Connectors	Pinout	Outputs per Connector	I/O Map
BL67-1RS485/422 with BL67-B-1M12*	A	1	0	B4	1	RS 485/422	X	1	0	B4	1	1
BL67-1RS485/422 with BL67-B-1M12-8*	B	1	0	B4-8	1	RS 485/422	X	1	0	B4-8	1	1
BL67-1RS232 with BL67-B-1M12*	A	1	0	B2	1	RS 232	X	1	0	B2	1	1
BL67-1RS232 with BL67-B-1M12-8*	B	1	0	B2-8	1	RS 232	X	1	0	B2-8	1	1
BL67-1SSI with BL67-B-1M23*	C	1	0	SSI-23	1	SSI	X	1	0	SSI-23	1	2
BL67-1SSI with BL67-B-1M12-8*	B	1	0	SSI	1	SSI	X	1	0	SSI	1	2

* Base modules sold separately. See page G45.

Input/Output Connectors
Pinouts are shown on following page.

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n−1	(Data from modules to the left)							
	n	Data Byte 5 (MSB)							
	n+1	Data Byte 4							
	n+2	Data Byte 3							
	n+3	Data Byte 2							
	n+4	Data Byte 1							
	n+5	Data Byte 0 (LSB)							
	n+6	Buf Ovfl	Frame Err	HndSh Err	HW Failure	Prm Err	Reserved		
	n+7	STAT	TX_CNT_ACK		RX_CNT		RX_BYTE_CNT		
	n+8	(Data from modules to the right)							
Out	n−1	(Data for modules to the left)							
	n	Data Byte 5 (MSB)							
	n+1	Data Byte 4							
	n+2	Data Byte 3							
	n+3	Data Byte 2							
	n+4	Data Byte 1							
	n+5	Data Byte 0 (LSB)							
	n+6	Reserved						RxBuf Flush	TxBuf Flush
	n+7	STAT Res	RX_CNT_ACK		TX_CNT		TX_BYTE_CNT		
	n+8	(Data for modules to the right)							

I/O Data Map 2

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
In	n−1	(Data from modules to the left)							
	n	STOP	X	X	ERR PARA	UFLW	OFLW	ERR SSI	SSI DIAG
	n+1	UP	DN	REL CMP2	FLAG CMP2	STS CMP2	REL CMP1	FLAG CMP1	STS CMP1
	n+2	REG WR ACPT	REG WR ACK	X	X	SSI STS3	SSI STS2	SSI STS 1	SSI STS0
	n+3	REG RD ABRT	X	REG_RD_ADR					
	n+4	REG_RD_DATA, Byte 0							
	n+5	REG_RD_DATA, Byte 1							
	n+6	REG_RD_DATA, Byte 2							
	n+7	REG_RD_DATA, Byte 3							
	n+8	(Data from modules to the right)							
Out	−1	(Data for modules to the left)							
	n	STOP	X	X	X	X	X	X	X
	n+1	X	X	X	CLR CMP2	EN CMP2	X	CLR CMP1	EN CMP1
	n+2	REG WR	X	REG_WR_ADR					
	n+3	X	X	REG_RD_ADR					
	n+4	REG_WR_DATA, Byte 0							
	n+5	REG_WR_DATA, Byte 1							
	n+6	REG_WR_DATA, Byte 2							
	n+7	REG_WR_DATA, Byte 3							
	n+8	(Data for modules to the right)							

![BL67]

B2
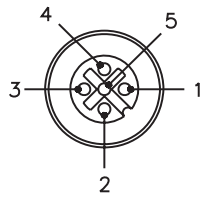
1 = NC
2 = TxD
3 = Gnd$_{ISO}$
4 = RxD
5 = Shield

B2-8
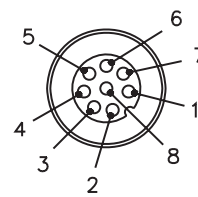
1 = RxD	5 = Gnd$_{ISO}$
2 = TxD	6 = NC
3 = RTS	7 = NC
4 = CTS	5 = Shield

B4
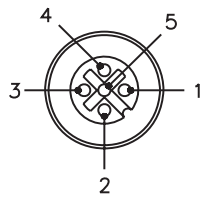
1 = Tx
2 = Tx+
3 = Rx-
4 = Rx+
5 = Shield

B4-8
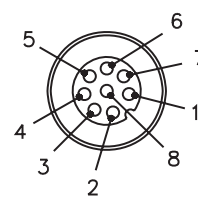
1 = Rx+	5 = Rx-
2 = Tx+	6 = Gnd$_{ISO}$
3 = Tx-	7 = NC
4 = NC	5 = Shield
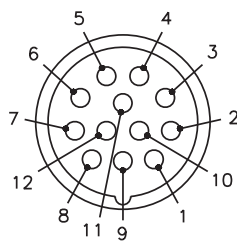
SSI-23

1 = V-	7 = NC
2 = V$_I$+	8 = Shield
3 = CLK+	9 = NC
4 = CLK-	10 = NC
5 = DATA+	11 = NC
6 = DATA-	12 = NC

SSI
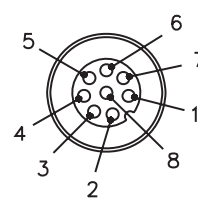
1 = V-	5 = DATA+
2 = V$_I$+	6 = DATA-
3 = CLK+	7 = NC
4 = CLK-	8 = Shield

2 Analog Input Modules

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Various I/O Styles**

Electrical
- Operating Current: <35 mA from V_{MB}
  <12 mA from V

Power Distribution
- Inputs: V_I
- Logic: V_{MB} and V_I

Material
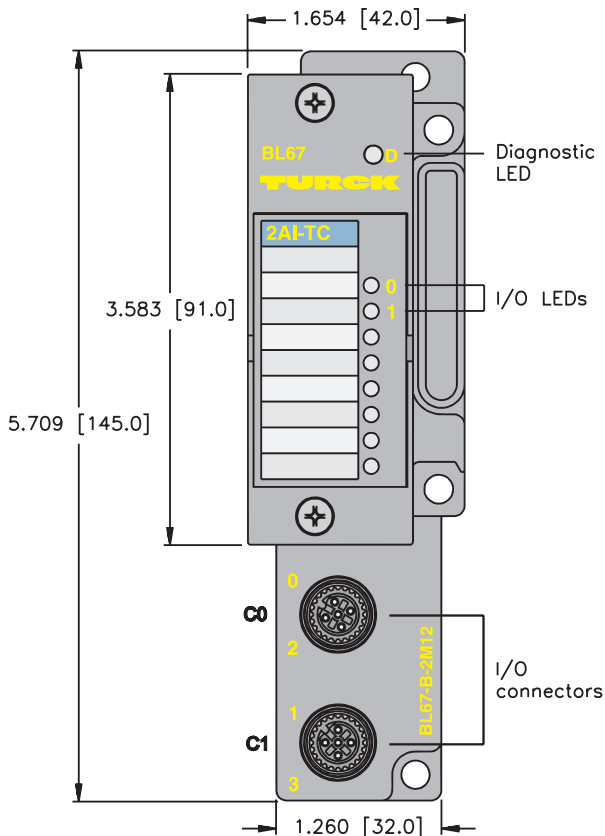- Connectors: Nickel-plated brass
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)
- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)
- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status

BL67-2AI-V
BL67-2AI-I
BL67-4AI-V/I
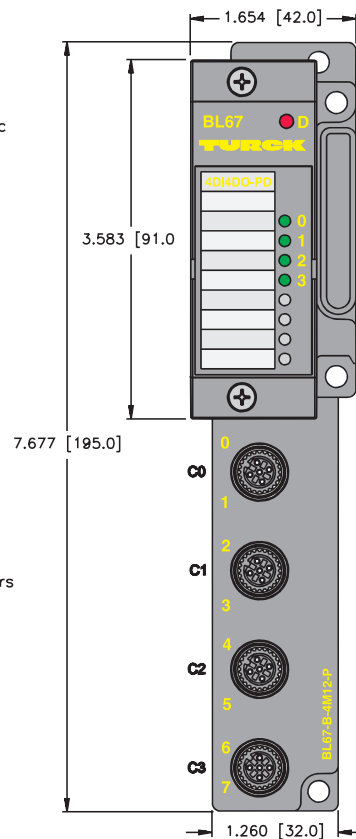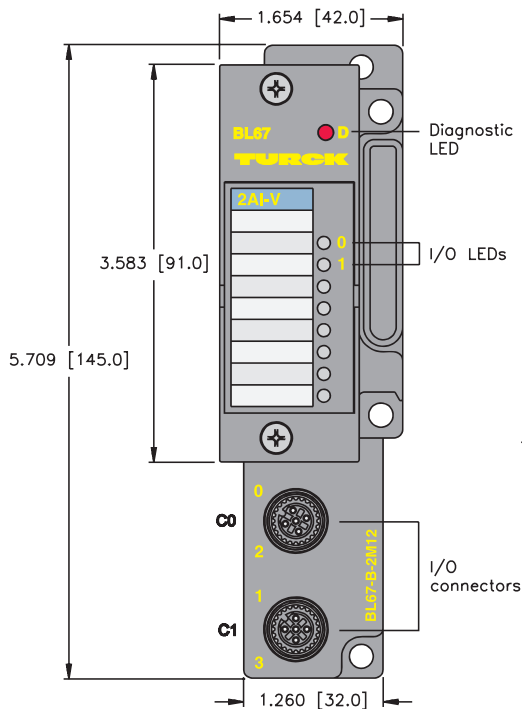
BL67-4AI-V/I

	Inputs								Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
BL67-2AI-V with BL67-B-2M12*	2	0-1	B-AI	1	-10/0 to 10 V				1
BL67-2AI-I with BL67-B-2M12*	2	0-1	B-AI	1	0/4 to 20 mA				1
BL67-4AI-V/I with BL67-B-4M12*	4	0-3	B-AI	1	-10/0 to 10 V 0/4 to 20 mA				2

* Base modules sold separately. See page G45.

Input Connectors

B-AI

Loop Powered (Isolated)   DeviceNet Powered Transducer
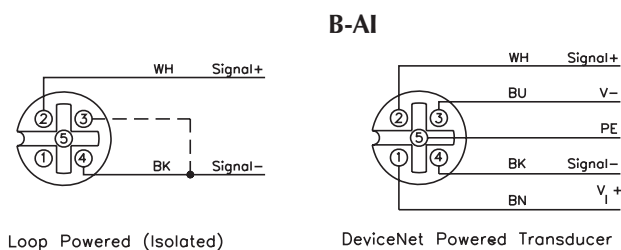
Mating cordset:
Isolated Loop: RK 4.5T-*M-RS 4.5T/S653
Loop Powered: RK 4.5T-*M-RS 4.5T/LPS/S653

Applications:
TURCK Sensors: LU; RK 4.4T-*-RS 4.4T/S1118
LI; RK 4.4T-*-*RS 4.4T/S1120

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	n−1	(Data from modules to the left)							
	n	Channel 0, LSB							
	n+1	Channel 0, MSB							
	n+2	Channel 1, LSB							
	n+3	Channel 1, MSB							
In	n+4	Channel 2, LSB							
	n+5	Channel 2, MSB							
	n+6	Channel 3, LSB							
	n+7	Channel 3, MSB							
	n+8	(Data from modules to the right)							

2 Temperature Input Modules

BL67-2AI-TC
BL67-2AI-PT

UL CE CSA

Electrical

- Operating Current: <35 mA from V_{MB} (TC)
  <45 mA from V_{MB} (PT)
  <30 mA from V (all)

Power Distribution

- Inputs: V_I
- Logic: V_{MB} and V_I
- Thermocouple Types: B, E, J, K, N, R, S and T (TC)
- RTD Types: PT100, PT200, PT500, PT1000, Ni100, Ni1000 (PT)

Material

- Connectors: Nickel-plated brass
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
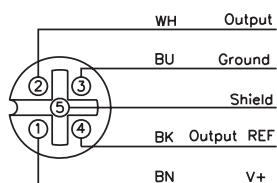- LEDs for each I/O point to indicate on/off status

Dimensions: 1.654 [42.0], 3.583 [91.0], 5.709 [145.0], 1.260 [32.0]

Diagnostic LED, I/O LEDs, I/O connectors

BL67 TURCK, 2AI-TC, C0, C1, BL67-1B-2M12

	Inputs								Data
Part Number	Input Count	Connectors	Pinout	Inputs per Connector	Sensor Style	Group Diagnostics	Individual Diagnostics	Wire-Break Detection	I/O Map
BL67-2AI-TC with BL67-B-2M12*	2	0-1	TC	1	TC				1
BL67-2AI-PT with BL67-B-2M12*	2	0-1	RTD	1	RTD				1

* Base modules sold separately. See page G45.

Input Connectors

TC

WH   TC (+)
BU   Ground
      Shield
BK TC(−),CJ(−)
BN   CJ (+)
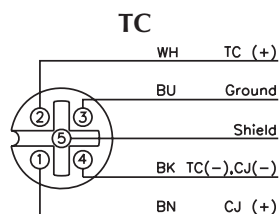
**Mating Connector
(field wireable):**

   WAS5-THERMO (includes cold
junction compensation)

   Isolated Loop: RK 4.5T-*M-RS 4.5T/S653
   Loop Powered: RK 4.5T-*M-RS 4.5T/LPS/S653

RTD

WH   Signal+
BU   E−
      Shield
BK   Signal−
BN   E+
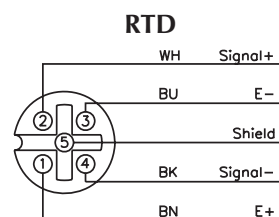
Mating cordset:

   RK 4.5T-*-RS 4.5T
   Isolated Loop: RK 4.5T-*M-RS 4.5T/S653
   Loop Powered: RK 4.5T-*M-RS 4.5T/LPS/S653

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	n−1	(Data from modules to the left)							
	n	Channel 0, LSB							
In	n+1	Channel 0, MSB							
	n+2	Channel 1, LSB							
	n+3	Channel 1, MSB							
	n+4	(Data from modules to the right)							

2 Analog Output Modules

- **Modular I/O**
- **Voltage or Current Outputs**
- **IP 67 Protection**
- **Various I/O Styles**

BL67-2AO-V

BL67-2AO-I

Electrical

- Operating Current: <60 mA from V_{MB} (V)
  <40 mA from V_{MB} (I)
  <50 mA from V_I (all)

Power Distribution

- Inputs: V_I
- Logic: V_{MB} and V_I

Material

- Connectors: Nickel-plated brass
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs for each I/O point to indicate on/off status
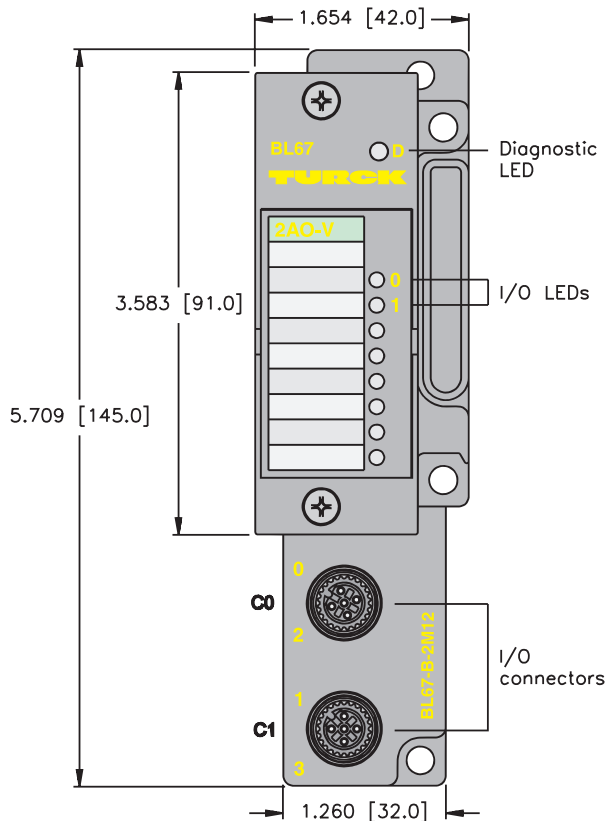
	Outputs							Data

Part Number	Output Count	Connectors	Pinout	Outputs per Connector	Type	Individual Diagnostics	Wire-Break Detection	I/O Map
BL67-2AO-V with BL67-B-2M12*	2	0-1	B-AOV	1	-10/0 to 10V			1
BL67-2AO-I with BL67-B-2M12*	2	0-1	B-AOI	1	0/4 to 20 mA			1

* Base modules sold separately. See page G45.

Output Connectors

B-AOV

WH — Output
BU — Ground
— Shield
BK — Output REF
BN — V+

Mating cordset:
RK 4.5T-*-RS 4.5T

B-AOI

WH — Output (+)
BU — Ground
— Shield
BK — Output (−)
BN — V+
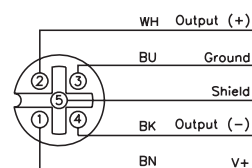
DeviceNet Powered Transducer

Mating cordset:
RK 4.5T-*-RS 4.5T

I/O Data Map 1

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	n−1	(Data for modules to the left)							
	n	Channel 0, LSB							
Out	n+1	Channel 0, MSB							
	n+2	Channel 1, LSB							
	n+3	Channel 1, MSB							
	n+4	(Data for modules to the right)							

Power Feeding Module

BL67-PF-24VDC

- **Modular I/O**
- **Isolate Power Segments**
- **IP 67 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <30 mA from V_{MB}
- Output Current: <10 A for downstream I/O

Power Distribution

- Accepts 24 VDC supply to provide V_I and V_O for downstream modules

Material

- Connectors: Nickel-plated brass
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the fieldbus gateway

Diagnostics (Physical)

- LED to indicate module bus communication status as well as I/O diagnostics
- LEDs to indicate power supply status

minifast **Pinouts**

Male

1 = Gnd
2 = Gnd
3 = PE
4 = V_I
5 = V_O

5-Pin
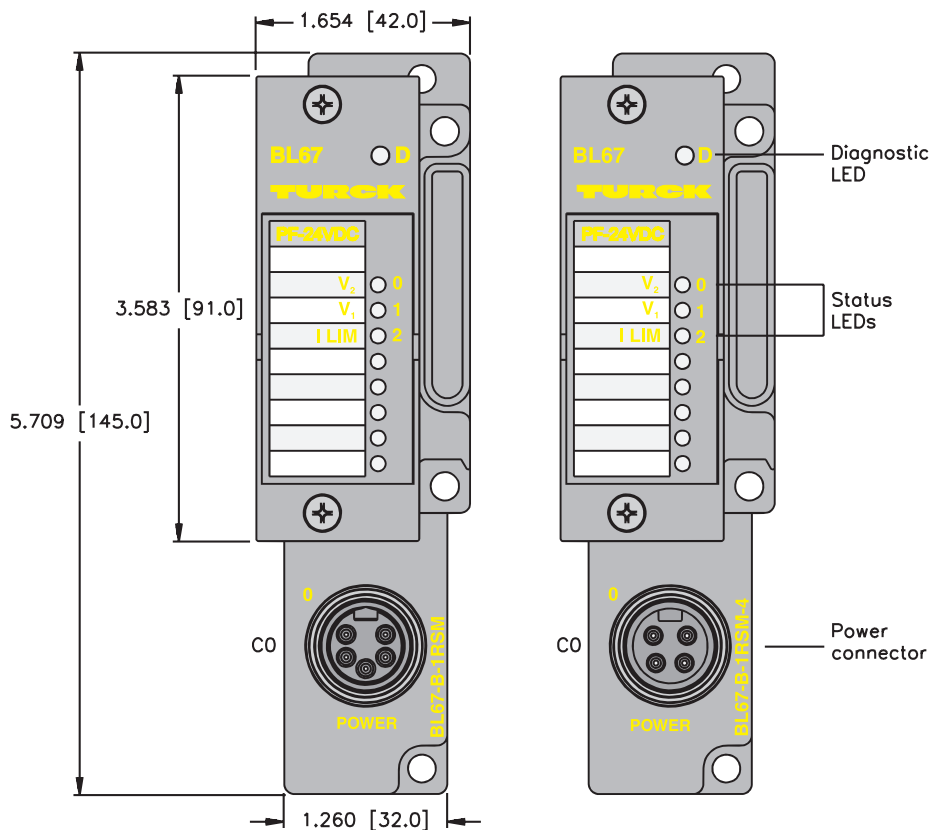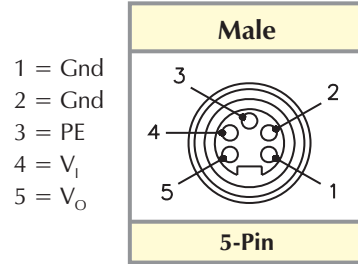
When used with BL67-B-1RSM base module

minifast **Pinouts**

Male

1 = V_O, V_I
2 = NC
3 = NC
4 = Gnd

4-Pin
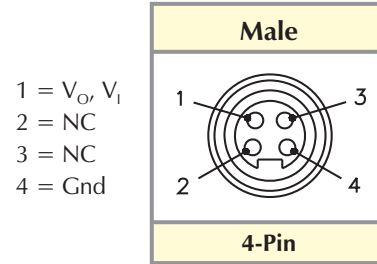
When used with BL67-B-1RSM-4 base module

BL67

Base Modules for BL67 I/O

Style	Part Number	Description
Two *eurofast* ® Connectors	**BL67-B-2M12**	Base module with two *eurofast* connectors. When used with 4 input or 4 output modules each connector has 2 I/O points.
Two *eurofast* Connectors with Paired I/O	**BL67-B-2M12-P**	Base module with two *eurofast* connectors. Each connector has 2 I/O points, paired so consecutive points are on the same connector.
Four *eurofast* Connectors	**BL67-B-4M12**	Base module with four *eurofast* connectors. When used with 8 input or 8 output modules each connector has 2 I/O points.
Four *eurofast* Connectors with Paired I/O	**BL67-B-4M12-P**	Base module with four *eurofast* connectors. Each connector has 2 I/O points, paired so consecutive points are on the same connector.

Base Modules for BL67 I/O

Style	Part Number	Description
One *eurofast* ® Connector (5-pin)	**BL67-B-1M12**	Base module with one ***eurofast*** 5-pin connector. Typically used with serial I/O modules.
One *eurofast* Connector (8-pin)	**BL67-B-1M12-8**	Base module with one ***eurofast*** 8-pin connector. Typically used with serial I/O modules.
Four *picofast* ® Connectors	**BL67-B-4M8**	Base module with four ***picofast*** connectors. Typically used with 4-input or 4-output modules.
Eight *picofast* Connectors	**BL67-B-8M8**	Base module with eight ***picofast*** connectors. Typically used with 8-input or 8-output modules.

Base Modules for BL67 I/O

Style	Part Number	Description
One M23 Connector (12-pin)	**BL67-B-1M23**	Base module with one 12-pin M23 connector. Typically used with 8-output or SSI modules.
	BL67-B-1M23-VI	Base module that allows full 4 A available from V+ pins.
One M23 Connector (19-pin)	**BL67-B-1M23-19**	Base module with one 19-pin M23 connector. For use with the 16-output module.
One *minifast*® Connector (5-pin)	**BL67-B-1RSM**	Base module with one 5-pin *minifast* connector. For use with the power feeding module, five wire power scheme.
One *minifast* Connector (4-pin)	**BL67-B-1RSM-4**	Base module with one 4-pin *minifast* connector. For use with the power feeding module, four wire power scheme.

	Part Number	Description
Labels for labeling electronic modules	BL67-Label/DIN-A4-50-PCS	DIN A4 sheet size
Programming Cable - For connecting the BL20/BL67 system to the I/O Assistant software	XN-PS2-CABLE	